EXHIBITION NUMBER
MARCH, 1941

The TOOL ENGINEER

MACHINERY • PRODUCTION • TOOLS

WAR AGAINST TIME

t guns but machines must conquer the clock as
nerica arms. Machines such as *New Britain Auto-*
atics, which pile up production with split-second
eed, relentless regularity. Fast, accurate, depend-
ble, *New Britain Automatics* stay on the job, help-
g National Defense win the war against time.
New Britain-Gridley Division, The New Britain
Machine Company, New Britain, Conn.

NEW BRITAIN
Automatics STAY ON THE JOB

A complete line of Screw Machines—Four and Six Spindles
up to 2¼" Capacity

Also a complete line of Chuckers—Four, Six and Eight Spindles
up to 10¼" Capacity

Official Publication AMERICAN SOCIETY OF TOOL ENGI

Accuracy Headquarters

Booth 129

On your left coming from the main entrance

ACCURACY is probably the most vital factor in National Defense. Thousands upon thousands of parts must be assembled into fleets of planes, tanks and guns. The burden of guaranteeing the success of those assemblies rests on the precision gages that govern production.

Pratt & Whitney have been in high gear for many months — 24 hours a day — making the precision gages needed for all kinds of production. Our display in Detroit includes many of these fine tools and gages, as well as demonstrations of the part they play in tooling up the national program. Our best informed men will be on hand to tell you the details.

Part of our exhibit will be a display of our latest small tool developments. Here we show taps, dies, reamers, milling cutters, punches, and many special tools. Included will be our famous "diamond blue" treatment that has increased cutting ability and tool life so remarkably.

On the gage tables will be all the standard gages, plus many specials which demonstrate how P&W ingenuity has met and solved some of the tough inspection problems that war level production introduced. Many Electrolimit Gage applications will be displayed — all part of our modern system of high speed, accurate selective assembly.

A section of our booth will contain many kinds and sizes of Kollerflex Flexible Shaft Equipment. These handy tools are doing their share in thousands of finishing jobs. They have taken the place of "muscle" finishing, and speeded up work to a remarkable degree.

Come in at Booth 129 — ACCURACY HEADQUARTERS. We will have a comfortable chair for you, a warm welcome, and all the information we can give to help you solve your problems.

PRATT & WHITNEY
DIVISION NILES-BEMENT-POND COMPANY
WEST HARTFORD, CONNECTICUT

Accuracy

NEWS from the GAGE FRONT:

opening up a bottle neck in gage equipment for Defense Work with 2 new inspection tools!

DIAL SNAP GAGE
Actual Size

UNIVERSAL MIDGET INDICATOR
Actual Size

We Cordially Invite You to Our

Booth No. 101 at the A S T E Show

DETROIT **March 25-29**

Standard Gage Company, Inc.
80 Parker Avenue, Poughkeepsie, N. Y.

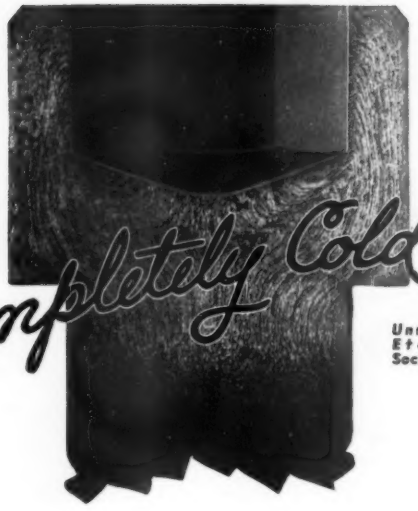
STANDARD Gages

HOLO-KROME
SOCKET SCREW PRODUCTS

BOOTH 156

A dramatic animated display

unfolding the story of
HOLO-KROME FIBRO FORGED
TRADE MARK
Socket Screws



Unretouched Photo Etched, Cutaway, Socket Head Cap Screw

Stop and see us
Socket Screw Engineers in attendance BOOTH 156

MACHINE & TOOL PROGRESS EXHIBITION
CONVENTION HALL, DETROIT, MICH.
MARCH 25-26-27-28-29, 1941

HK **HOLO-KROME**
fibro forged
TRADE MARK

THE HOLO-KROME SCREW CORP. **SOCKET SCREWS** HARTFORD, CONN. U.S.A.

THE TOOL ENGINEER

"America in the Making"

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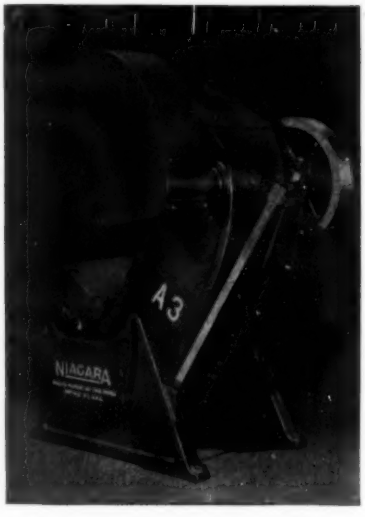
This Niagara No. A-3 Open Back Inclinable Press is typical of the complete range of sizes widely used by aircraft, ordnance, automotive and many other metal working plants.



The photograph at right shows this press in inclined position for discharging pieces through opening in the back.

Niagara Master Series "A" Inclinable Presses are built in sizes from 1¼" to 6½" diameter shafts with capacities from 7 to 190 tons. Write for Bulletin 58. Niagara Machine & Tool Works, 637-697 Northland Avenue, Buffalo, N. Y. Branches: Cleveland, Detroit, New York.

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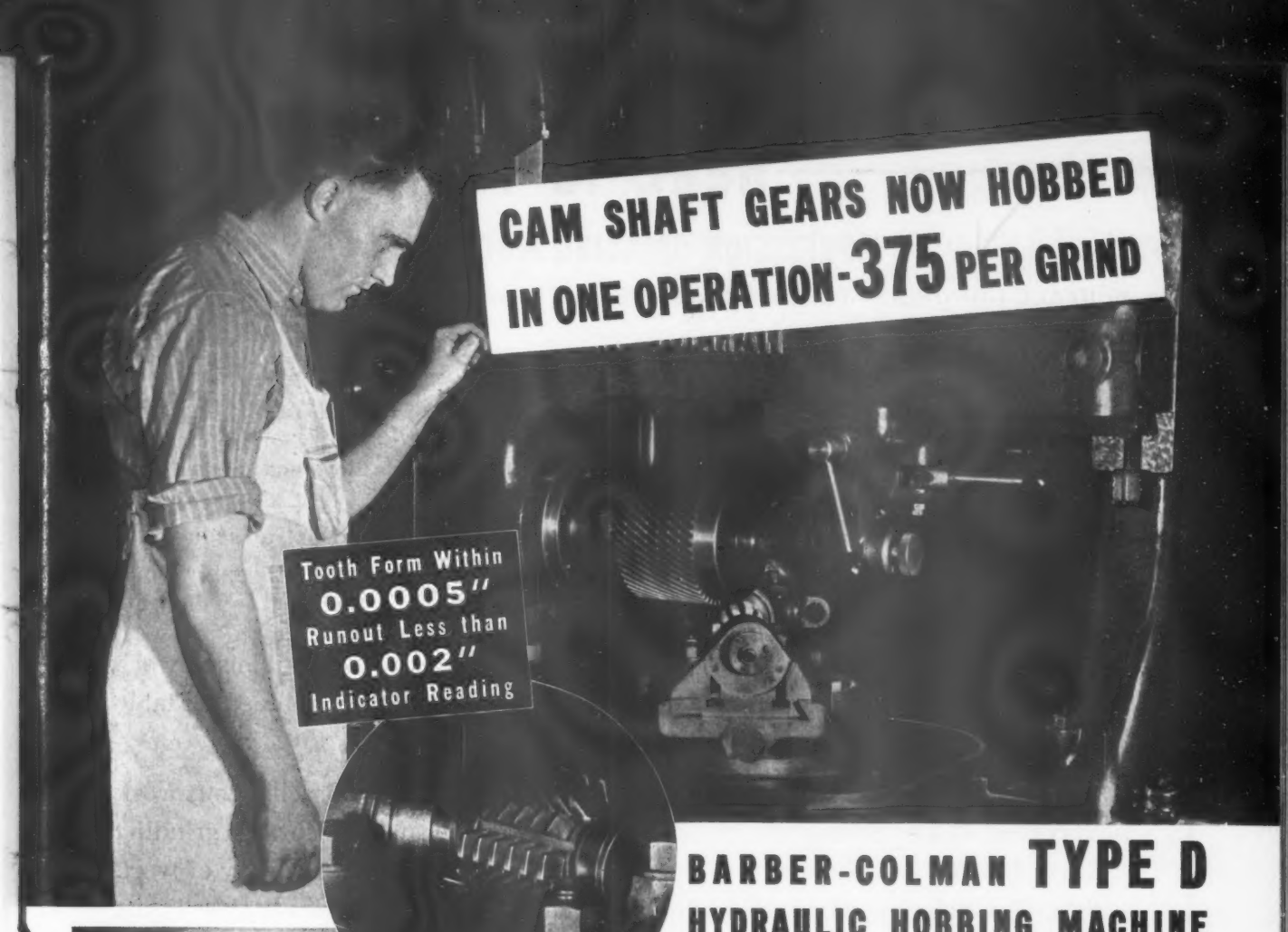

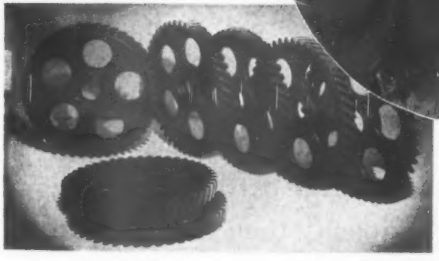

Note the fine finish and accuracy of these gears which were hobbed in the average floor-to-floor time of 40 minutes per load of 7.

The Figures

Name of Part — Cam shaft gear. Material — Cast iron chrome alloy.

Operation — Hobbing spiral gears having ¾" face, 7.953"—7.948" outside diameter, 46 teeth, 31° helix angle, 7 diametral pitch.

Number gears per load — 7.

Hobbing Machine — Barber-Colman Type D.

Hob Used — Barber-Colman Class A Ground Hob, 4⅛" diameter by 5" long, with 2½" taper hole, single thread, 15 gashes.

Hob Feed — 0.070" per rev. of work.

Hob Speed — 108 r.p.m.

Production — Average time, 40 minutes per load of 7.

Number of Settings — 3.

Pieces per Grind — 375.

Accuracy — Tooth form held within 0.0005". Runout less than 0.002" indicator reading.

BARBER B-C COLMAN

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HOBS, HOBBING MACHINES, HOB SHARPENING MACHINES, REAMERS, REAMER SHARPENING MACHINES, MILLING CUTTERS, SPECIAL TOOLS

BARBER-COLMAN TYPE D HYDRAULIC HOBBING MACHINE

Cuts Costs on Cam Shaft Gears

A leading tractor builder furnishes this example of how Barber-Colman Hobbing simplifies precision operations, cuts costs and speeds work. Cam shaft gears produced on Barber-Colman Type D Hydraulic Hobbing Machines are held to precision tolerances and subsequent operations formerly required are eliminated. Seven gears constitute one load, and are hobbed in approximately 40 minutes floor-to-floor.

Powerful hydraulic actuation and rugged machine design combine to make the Type D unexcelled for high-production, heavy-duty hobbing. On this job, a taper hob spindle and B-C Ground Hob with taper bore contribute to both precision and easy, fast, set-up. Hobs may be located on the spindle with consistant accuracy. Runout error averages less than 0.002".

Look into the advantages that Barber-Colman Complete Hobbing Service can bring you. Your request for information is without obligation.

• Illustrated Bulletin 1477 completely describes the numerous advantages of Barber-Colman Type D Hydraulic Hobbing Machines, with specifications. Write for your copy today.

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For bore and face grinding in one setting
STYLE No. 172 GAP . . . . . For work requiring extra large swing
STYLE No. 174 GAP . . . . . For greater capacity than No. 172 Gap

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INTERNALS—For Airplane Cylinders

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DOUBLE QUICK

. . . . AND SOMETHING TO SPARE WITH GISHOLT SIMPLIMATICS . . . .

If you're machining parts in large quantities, it's time to give some thought to Gisholt Automatic Lathes—engineered to your particular requirements. They'll give you the speed and accuracy you want. And they'll also give you the automatic operation that lets you make more use of present equipment and skilled help.

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IN THE DARK ALL CATS ARE BLACK

. . . *in the bright light of performance*

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PROVE *their worth . . . at* LOWER *cost*

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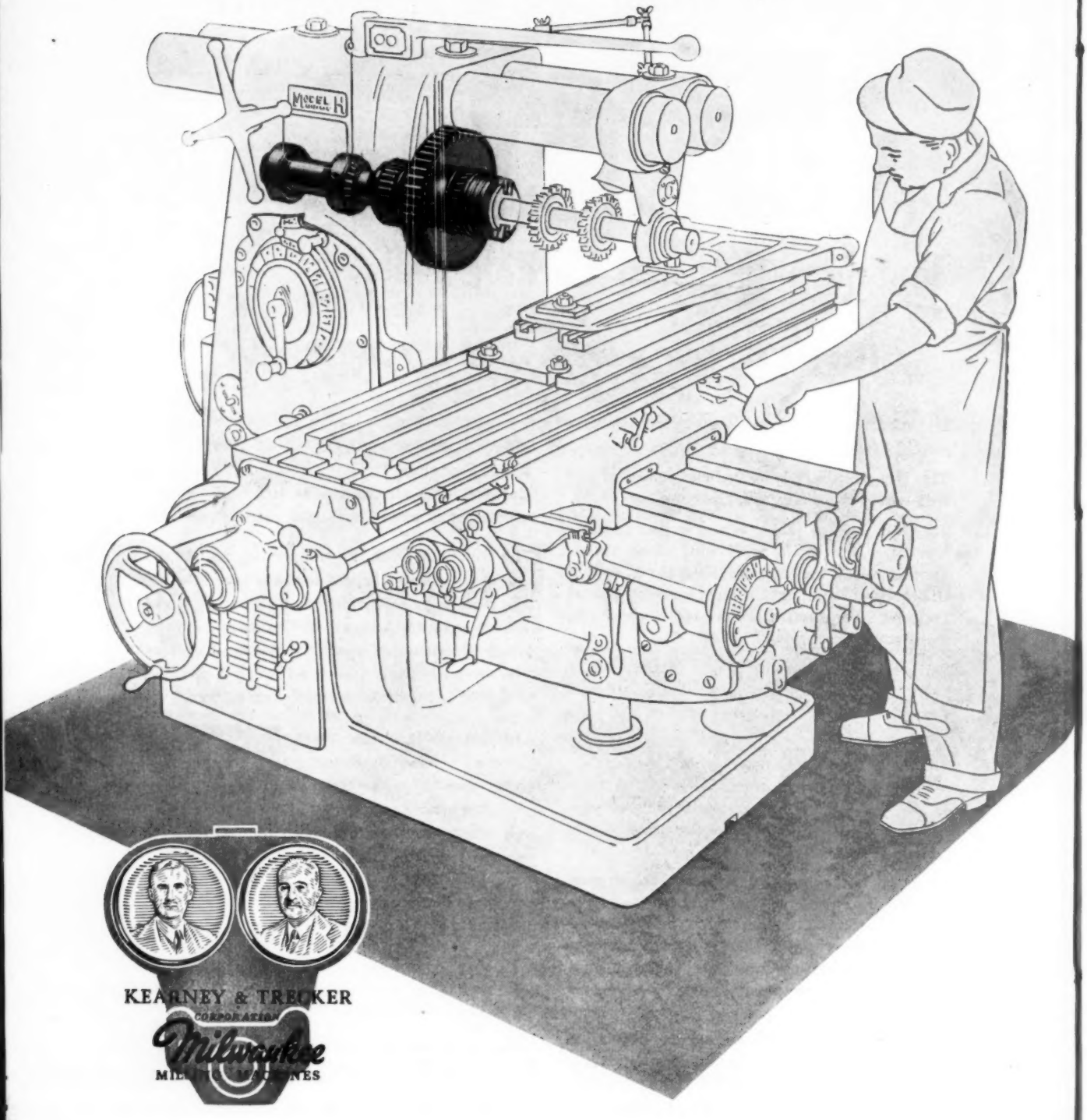
KEARNEY & TRECKER CORPORATION • Milwaukee, Wis., U. S. A.



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THE CARPENTER STEEL CO., READING, PA.

Bring Your Tool Steel Selection Problems to Carpenter's "Magic Mirror"—Machine and Tool Progress Exhibition, Detroit, March 25th to 29th.

Carpenter
MATCHED
TOOL STEELS

3 WAYS TO GET FIRTHITE TOOLS

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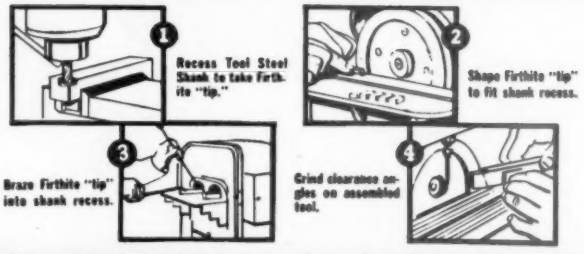
Firth-Sterling offers the *plan,* the *information* and the *materials* for making FIRTHITE Cutting Tools in your own shop. In four basic operations complete carbide tools may be prepared from Firth-Sterling materials. Only standard tool room equipment is required for this work, plus a brazing furnace or torch for brazing.



3 From Your Local Authorized FIRTHITE Tool Maker

In many conveniently located cities local tool makers of established reputation and ability have been authorized by Firth-Sterling to make Carbide Cutting Tools from genuine FIRTHITE materials. Consult your local classified telephone directory, or write for the name of the authorized tool makers nearest to you.

Tools—Tungsten Carbide

Cole Carbide Industries 24645 Ryan Rd. Royal Oak	TO wnsnd-8-7977
Eclipse Counterbore Co. 7410 St. Aubin Ave.	TR inity-2-4581
Falcon Tool Co. 12502 Greiner Ave.	PI ngre-4800
The Gairing Tool Co. 1629 W. Lafayette St.	RA ndlph-7927
Genessee Tool Co. 6432 Cass Fenton	MAdison-6300
Goddard & Goddard 12280 Burt Rd.	RE dfrd-3000
Gorham Tool Co. 14400 Woodrow Wilson Ave.	TO wnsnd-8-0020
Midwest Tool & Mfg. Co. 2360 W. Jeff.	LA fayet-0055
Morse Tool Co. 116 E. Goldengate Ave.	TO wnsnd-8-2090
Motor Tool Mfg. Co. 12281 Turner St.	HO grth-5300
Production Tool Co. of America 6474 Le Grand Ave.	PL aza-6717
Super Tool Co. 21650 Hoover Rd.	AR lngtn-1500
Weston Company 1050 Mt. Elliott Ave.	FI tzry-1400

Information about any of these optional sources, that assure you of the advantage of genuine FIRTHITE Sintered Carbide Cutting Tools, will be gladly furnished upon request.

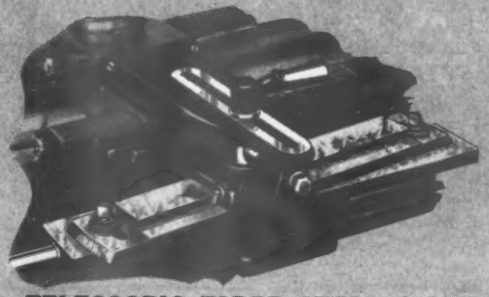
FIRTH-STERLING STEEL COMPANY

OFFICE AND WORKS:
McKEESPORT, PA.
BRANCH WAREHOUSES:
NEW YORK CHICAGO
HARTFORD PHILADELPHIA
LOS ANGELES DAYTON
CLEVELAND DETROIT

New!

South Bend Series "S" Tool Room Precision Lathe

16" x 6' South Bend Series "S" Underneath Belt Motor Driven Tool Room Precision Lathe.



TELESCOPIC TAPER ATTACHMENT

Turns and bores tapers up to 3½ inches per foot smoothly, easily, and accurately. Telescopic feature eliminates necessity of disconnecting cross feed screw when taper attachment is in use.

THE NEW South Bend Series "S" Tool Room Precision Lathe has been designed and built for efficient service in the modern tool room. Standard equipment includes draw-in collet chuck attachment, micrometer carriage stop, thread dial, chip pan, collet rack, and telescopic taper attachment.

Spindle speeds range from 21 to 725 R.P.M. Quick change gear box makes all threads and feeds instantly available. Large diameter hand wheels, clear-cut easy reading graduations, and conveniently arranged controls reduce operator fatigue, and assure maximum production.

Smooth vibration-free operation at high speed is assured by the direct belt drive to the spindle. A wrenchless bull gear lock permits engaging the back-gears quickly when slow speeds are required for machining large diameters.

SOUTH·BEND LATHE WORKS

476 E. Madison St., South Bend, Indiana. U. S. A.

YOU HAVE TO KNOW THE FUNDAMENTALS TO GET *"Results"*

But that's all you do have to know to get *superior* results with Graph-Tung, Graph-Mo, Graph-Sil, Graph-Al and Graph M. N. S. steels.

An ordinary tool steel die produced 50,000 pieces per grind and had to be discarded after producing 1,000,000 pieces. A Graph-Mo die now being used on the same job has produced 176,000 smoother, scratch-free pieces without regrinding. Anticipated life of the Graph-Mo die on the basis of this performance is 3,000,000 pieces.

Let us tell you more about these free machining, wear resisting steels. Ask for the Graphitic Booklet. It shows many specific applications of TIMKEN Graphitic Steels.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO
Steel and Tube Division

TIMKEN
ALLOY STEELS

Manufacturers of TIMKEN Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; TIMKEN Alloy Steels and Carbon and Alloy Seamless Tubing; and TIMKEN Rock Bits.

Precision COUNTERBORES
Precision BORING MACHINES
Precision HYDRAULIC POWER UNITS
Precision CUTTING TOOLS
IF IT'S Precision YOU NEED!
... EVERY EX-CELL-O PRODUCT REPRESENTS THE HIGHEST Precision PERFORMANCE IN THE MACHINE TOOL INDUSTRY
FROM the day of its organization, Ex-Cell-O has maintained only one standard in the designing and the making of any machine, tool, or part bearing the Ex-Cell-O name—the greatest degree of accuracy that progressive engineering, skilled craftsmanship, and modern factory methods and facilities can produce . . . this is why it will definitely pay you—if you have any need or problem in the metal-working fields indicated by the precision machines and tools shown here—to get in touch with Ex-Cell-O.
EX-CELL-O CORPORATION - DETROIT, MICH.
Precision THREAD GRINDERS
Precision CARBIDE TOOL GRINDERS
Precision DRILL JIG BUSHINGS
Precision INTERNAL LAPPING MACHINES
Precision BROACHES
Precision GRINDING SPINDLES
Precision CENTER LAPPING MACHINES

EX-CELL-O Precision MACHINES AND TOOLS

EX-CELL-O CORPORATION
1204 Oakman Blvd., Detroit, Mich.

Send folders on following Ex-Cell-O Precision Products_____

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Address_____

5 OPERATIONS WITH BLUE PRINTING...

2 EASY STEPS WITH OZALID

OZALID SAVINGS

SAVES DRAFTING

Duplicates of originals on transparent paper, cloth or foil for branches or customers are produced in the same simple manner as standard Ozalid Whiteprints.

SAVES TIME

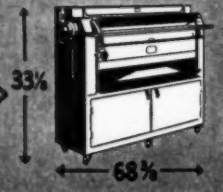
Ozalid Whiteprints are made in two simple operations...(1) exposure and (2) dry development... without washing, fixing, drying or trimming.

SAVES LABOR AND MATERIALS

In all except the-fastest Ozalid Whiteprint machines one operator handles capacity production. Ozalid cut sheets avoids trimming which saves up to one-third in materials.

SAVES SPACE

All Ozalid machines are compact in design and can be installed in any plant, office or drafting room. The Model "F" as illustrated occupies less than 16 sq. ft. of space.



IN rigging your production for an all-out effort, don't overlook your print making equipment. A back number in the print room is a veritable jinx to high-gear performance.

When your print making equipment becomes a bottleneck, it breaks down the co-ordinated steps of production...stands men up . . . ties a knot in your entire operating schedule. Don't wait till your reproduction department bogs down. Your guarantee of a fast, even flow of prints is the adoption of the Ozalid Process.

The Ozalid Process reduces print making to the two simple steps of exposure and dry development . . . completely eliminates three operations in the old-time blue print process and, in addition, provides positive prints, developed dry and true-to-scale.

For prints on the spot . . . in a hurry . . . when you want them, choose the Ozalid Process. There is a full line of Ozalid Whiteprint Machines which do a complete job of print making . . . and for those who already have blue printing equipment which can be used as a printer, there is a selection of dry developing machines.

Send today for illustrated literature on the Ozalid Process and equipment. Free sample booklet of dry developed Ozalid prints on request.

SPECIFY Ozalid WHITEPRINTS

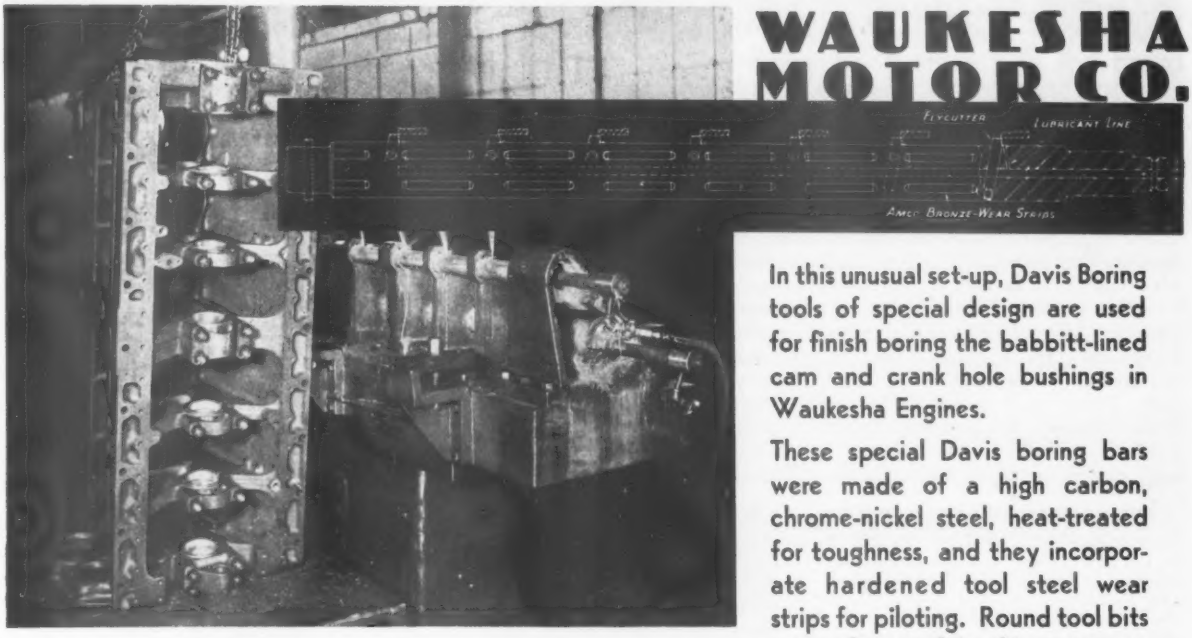
OZALID PRODUCTS DIVISION

GENERAL ANILINE & FILM CORPORATION
JOHNSON CITY, N. Y.

Ozalid in Canada • HUGHES OWENS CO. LTD., Montreal

"These Special Davis Boring Bars Have Been Outstandingly Efficient!"

WAUKESHA MOTOR CO.



In this unusual set-up, Davis Boring tools of special design are used for finish boring the babbitt-lined cam and crank hole bushings in Waukesha Engines.

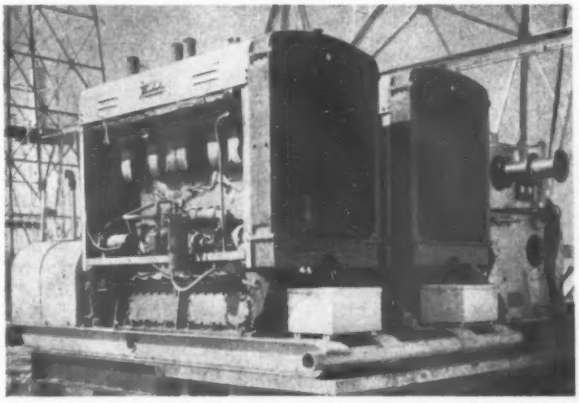
These special Davis boring bars were made of a high carbon, chrome-nickel steel, heat-treated for toughness, and they incorporate hardened tool steel wear strips for piloting. Round tool bits were also used in this set-up to finish bore babbitt.

If **you** have a **special, unusual** boring job, it will pay you to investigate Davis Boring Tools. Send us prints of your work, and without obligation, we'll gladly submit you a helpful, specific recommendation.

One of the outstanding features of this boring job for Waukesha Engines is the **lubricant line** which runs the entire length of the boring bar, applying the lubricant to each cutter at the point of cutting. To accomplish this, the Davis Tool was constructed with a special head (note above blue print), which is free to revolve on the bar, and through which the lubricant is applied to the bar while the latter is in rotation.

Applying lubricant in this manner enables Waukesha Motor Co. to obtain the smooth, clean finish they desired; and also eliminates the difficulty with chips which is usually encountered in boring babbitt.

DAVIS BORING TOOL DIVISION
Larkin Packer Co., Inc., St. Louis, U. S. A.



Two Waukesha Hesselman 180 hp. engines driving Portable rig and Wilson Snyder slush pump, for Macson Oil Co., at Long Beach Flood Control Strip, California.

DAVIS BORING TOOLS

SAFETY PLUS -efficiency and accuracy!

Here is a grinder that can be used by even the most inexperienced operator with a minimum of risk. From the patented Twin-Lite safety shields to the rugged and machined tool rest every item of design and construction has been developed to give maximum safety, efficiency and accuracy. New standards have been set by these grinders. Wheels are balanced to within 1/100 inch ounce to insure vibrationless performance. The new Twin-Lite Safety Shields and lamp attachments flood the wheels and work from both sides, permitting much more accurate grinding and making the grinder independent of the shop lighting system. Quickly replaceable bulbs (two in each shield) are thoroughly ventilated and fitted with polished reflectors. Ball bearings are lubricated for their entire life . . . accurate tool supports . . . strong and adjustable spark guards . . . these are only some of the features found in these remarkable grinders.

The Rifle-Bullet Test!

To test the strength and completeness of the guarding of these grinders, a number of wheels were deliberately smashed with a rifle bullet while the grinder was running at speeds from 3400 to 8000 R.P.M. Photo at the right shows one wheel that was smashed at the highest speed—and it can be plainly seen what happened to the guard — nothing! The spark guard was slightly bent, and that was all. That's safety plus!

Also Bench and Belt Driven Models

Built in both single phase and three phase models, bench and pedestal types, motor and belt-driven there is a Delta grinder to fit every shop. The motor-driven bench grinder also incorporates all of the latest Delta design and construction features . . . Twin-Lite Safety Shield . . . double seal New Departure ball bearings . . . strong and efficient wheel and spark guards . . . fully adjustable machined tool rests . . . built in toggle switch . . . cast iron water pot . . . absolute freedom from vibration (due to especially balanced Aloxite wheels).

By the Makers of Delta Drill Presses

Advanced design and modern production methods have won world-wide acceptance of Delta single and multi-spindle drill presses. Delta grinders are designed by the same engineers—and made by the same methods that have made possible new standards in machine tool values!

SEND FOR SPECIAL GRINDER BULLETIN

Send coupon below for Special Grinder Bulletin giving full details and specifications on the complete line of Delta grinders. Also send for latest Delta Catalog of industrial power tools.

The DELTA MFG. CO.
(INDUSTRIAL DIVISION)
652 E. VIENNA AVENUE MILWAUKEE, WISCONSIN

The Delta Mfg. Co. (Industrial Division)
652 E. Vienna Ave., Milwaukee, Wis.

Gentlemen: Please send me your special Grinder Bulletin giving full details and specifications on the complete line of Delta Grinders. Also send me your latest Delta Catalog of industrial power tools.

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Address.....

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When *You Have to Contend with*

ABRASION, HEAT, AND CORROSION

Use Haynes Stellite Alloy Specialties

A unique combination of properties makes Haynes Stellite alloy the outstanding material for innumerable applications where high resistance to abrasion, heat, or corrosion is required. Look over the interesting characteristics of Haynes Stellite alloy listed below:

- Haynes Stellite alloy is inherently hard and abrasion-resistant — even at red heat.
- It is extremely resistant to atmospheric corrosion, and also resists the action of many common corrosive agents.
- It is practically non-magnetic.
- It takes an extremely high polish.
- It has a low coefficient of friction.

You can obtain Haynes Stellite alloy specialties cast and finished to your own specifications. Use this modern material to reduce down-time and decrease maintenance costs.

Let us help you investigate the advantages of using Haynes Stellite alloy specialties in your business. Write the nearest district office, without obligation.

HAYNES STELLITE COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

General Office and Works—Kokomo, Indiana
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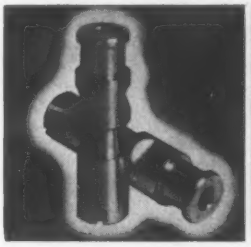
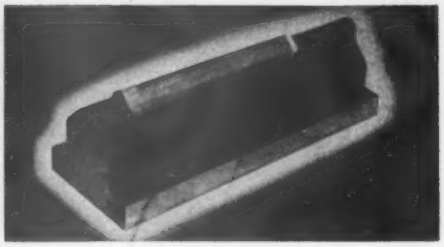
Information on Haynes Stellite Company products is also available through all apparatus shipping points of The Linde Air Products Company.

"Haynes Stellite" is a registered trade-mark of Haynes Stellite Co.

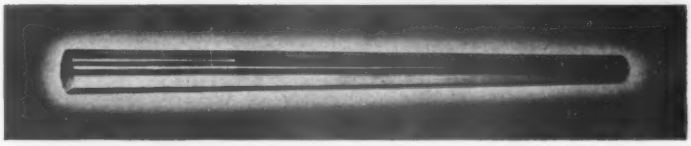
HAYNES STELLITE TRADE MARK



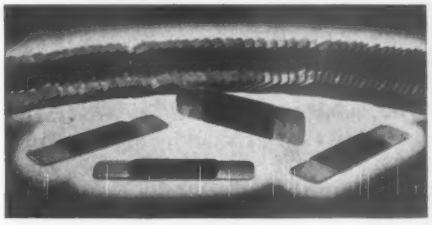
Automotive — These fuel pump plunger lever pins for diesel engines are cast of Haynes Stellite alloy and finished to accurate dimensions. They resist abrasion and corrosion.



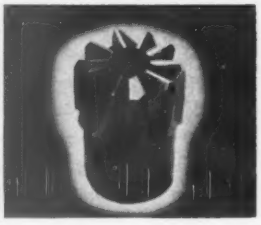
Electrical—This solid die—used in the manufacture of electrical products—weighs 10 lb. By contrast, Haynes Stellite alloy phonograph needles are also cast and ground.



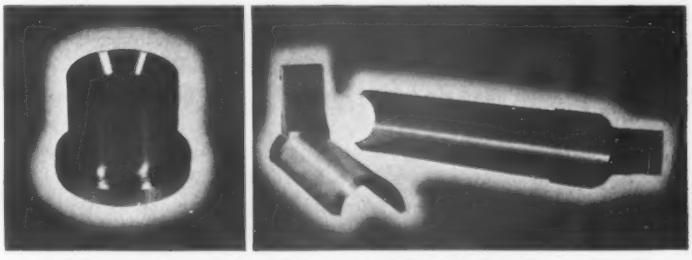
Petroleum—Pump rods like this are made by butt-welding steel or nickel alloy ends to the Haynes Stellite alloy center, where abrasive and corrosive action occurs. Such composite specialties are frequently used.



Rubber—These rubber cutter knives, made from rolled sheet of a malleable grade of Haynes Stellite alloy, retain a sharp cutting edge for a long period of service.



Machinery—Red hardness and high cutting quality characterize standard Haynes Stellite metal-cutting tools, and also special tools such as the spot facer shown above.



Valves—This cast and ground seat ring for an "anti-coking valve" is used in conjunction with a Haynes Stellite alloy valve stem, to withstand heat, abrasion, and corrosion.

Chemicals—These Haynes Stellite alloy battery mix knife parts, used in the manufacture of dry batteries, resist the severe abrasion and chemical corrosion encountered.

Red-hard, wear-resisting alloy of cobalt, chromium, and tungsten.

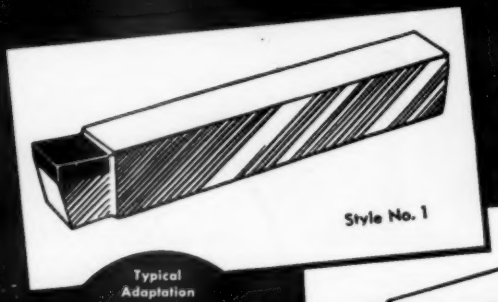
Haynes Stellite Company products will be displayed at Area 362, Machine and Tool Progress Exhibition; Convention Hall. Detroit; March 25-29.

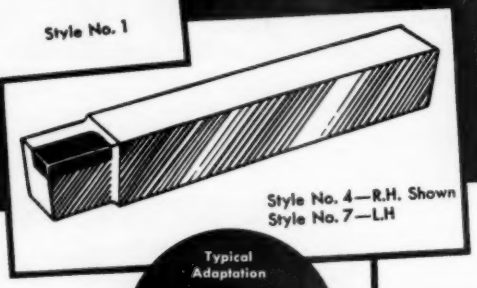
WHY WAIT FOR SPECIAL TOOLS?

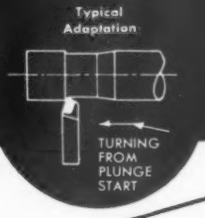
...It's easy to Grind

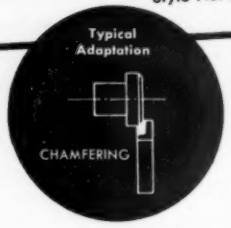
CARBOLOY STANDARD TOOLS

to meet many special requirements... and you get them fast!









Need carbide tools *FAST*? Machines tied up—or *slowed* up—awaiting tool deliveries?

Carboloy *STANDARD* tools may be the answer...

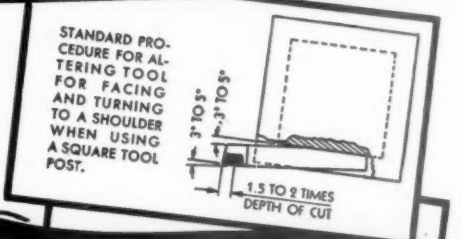
Suitable—in the form you receive them—for 80% of all turning, boring, facing jobs on steel, cast iron, etc., Carboloy *STANDARD* tools can be quickly adapted, when necessary, to meet special requirements such as chamfering, grooving, undercutting, etc. All have LARGE tips to permit variation.

To change Carboloy STANDARD tools for special uses you simply grind—in your tool room—following the same fast, simple grinding methods used for re-grinding Carboloy tools. Many plants now maintain a stock of Carboloy STANDARD tools for quick adaptation to special shapes—as well as for daily use in standard forms.

This is important: If you have not already checked to see how many of your present carbide tool requirements can easily conform with STANDARD tool specifications, do so now. You'll save on initial tool cost—and eliminate needless delays.

Carboloy STANDARD tools are available in five styles and three grades, one for steel cutting, two for cast iron, brass, etc. You get them *FAST*, and at prices close to *steel tools*.

Send for catalog sheets GT-125.


STANDARD PROCEDURE FOR ALTERING TOOL FOR FACING AND TURNING TO A SHOULDER WHEN USING A SQUARE TOOL POST.
3° TO 5°
3° TO 5°
1.5 TO 2 TIMES DEPTH OF CUT

FOR EMERGENCY TOOLING... MAKE YOUR OWN

Order Standard Carboloy Blanks—available for rapid delivery. You mill or grind a recess in your tool shank—and braze in the standard Carboloy blank. Then grind—as easily as you now REGRIND—and the tool is ready for use.

Complete instructions furnished.

Carboloy standard blanks are furnished in two styles, 65 sizes, and in grades 78B for steel cutting, 44A & 883 for cast iron, aluminum, brass, etc.

Look for this triangular trade mark on tools you buy. It is your assurance of genuine Carboloy cemented carbide.

CARBOLOY COMPANY, INC., 11145 E. 8 MILE ROAD, DETROIT, MICH.

Chicago • Cleveland • Los Angeles • Newark • Philadelphia • Pittsburgh • Worcester, Mass.

CARBOLOY

REG U.S. PAT. OFF.

TUNGSTEN CARBIDE—TANTALUM CARBIDE—TITANIUM CARBIDE

VISIT BOOTH 124—MACHINE AND TOOL PROGRESS EXHIBITION—DETROIT—MARCH 25-29, 1941

See BETTER BLUEPRINTS *made*

FASTER . . . AT LOWER COST . . . VISIT BOOTH 180 ★

the

EASE "22-16"

NTINUOUS BLUEPRINTING EQUIPMENT *does it every day!*

BECAUSE it prints even poor tracings rapidly . . . Has Three Speed Lamp Control . . . Actinic "no-break" Arc Lamps . . . Sliding "Vacuum-like" Contact, etc.

BECAUSE it uses less chemical and applies it uniformly, produces thoroughly washed, unstained, perfectly dried, flat, unwrinkled prints.

BECAUSE it combines Quality . . . Speed . . . Low Production Cost . . . and Moderate Initial Investment . . . for the Commercial Blueprinter . . . Industrial Plant . . . Government Department whose production requirements do not exceed 20 feet per minute.

SEND FOR DESCRIPTIVE LITERATURE ON MODEL "22-16"

THE C. F. PEASE COMPANY

2657 WEST IRVING PARK ROAD • CHICAGO

*MACHINE & TOOL PROGRESS EXHIBITION • MARCH 25 TO 29, 1941 • CONVENTION HALL • DETROIT, MICHIGAN

"LOGAN"
FOR 25 YEARS
"LOGAN" Air & Hydraulic
Equipment Has Saved
TIME - EFFORT - MOTION
This year marks "LOGAN'S" twenty-fifth anniversary. During those years "LOGAN" has solved production problems and speeded up manufacturing in most of the largest industrial plants in the world. And now in these days of great stress "LOGAN'S" entire resources and manpower are being devoted to the defense of America in her Armament Program. Let "LOGAN" Representatives and "LOGAN" Engineers make recommendations on your production problems.
Logansport Machine, Incorporated
902 Payson Road Logansport, Indiana
Manufacturers of Air and Hydraulic Devices,
Chucks, Cylinders, Valves, Presses and Accessories.
"LOGAN"
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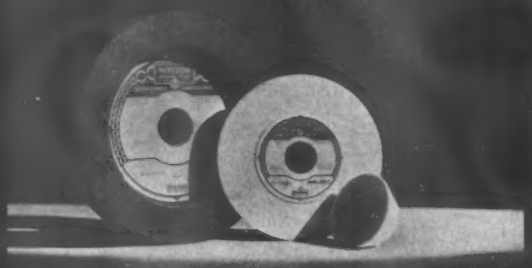
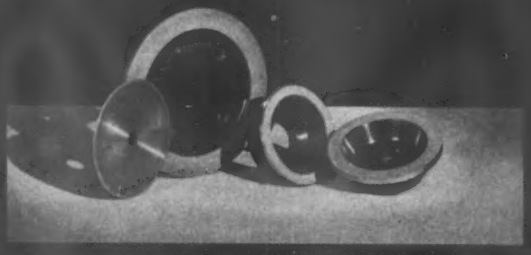
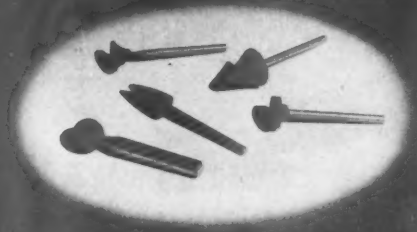
TOOL ENGINEERS







. . . Let Norton Share Your Grinding Worries

THERE'S no time now in the tool engineer's day for details such as tool sharpening problems. But near you there is a Norton engineer ready to tackle the grinding jobs.

"B-E" Bond Alundum Wheels

For grinding high speed tool steels and similar alloys the Norton engineer will recommend the special "B-E" bond and one of the Norton fused alumina abrasives —Alundum, 19 Alundum, 38 Alundum or 57 Alundum. Grain, grade and structure selection will depend on the details of each job.

Diamond Wheels— Metal and Resinoid Bond

For off-hand grinding of single point cemented carbide tools he will recommend the Norton developed metal bonded diamond wheel — strong, heat-resistant and extremely long lived. For tool and cutter grinding of multi-blade carbide tools it will be the fast cutting resinoid bonded diamond wheel.

Resinoid and Shellac Cut-off Wheels

Cutting stock for making tools and dies, cutting broken tools for repointing, cutting chip breakers—if fast cutting action and long wheel life are more important he'll specify a resinoid wheel. But if a soft, free grinding action and minimum discoloration are essential it will probably be shellac bond.

Mounted Points and Wheels

For the countless finishing jobs on dies, molds and tools he has nearly 200 standard sizes and shapes in the Norton line to select from — fast cutting 38 Alundum wheels and points with spindles of stainless steel.

Take advantage of this *Norton Service* —let it work for you these busy days.

NORTON COMPANY
WORCESTER MASS.

NORTON ABRASIVES

W-800

"SON, YOU CAN BET THERE'S A DIFFERENCE!"

"Any two tools may look alike, young fellow. It's the way they perform on the job that makes the difference."

Old timers in production know — and apprentices soon learn — that all the difference between profit and loss may depend on the efficiency of the tool at the work-head. Morse Tools are made to keep pace with the productive capacities of the newest and finest machine tools.

MORSE THERE IS A DIFFERENCE **TWIST DRILL AND MACHINE COMPANY**

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NEW YORK STORE: 130 LAFAYETTE ST. - - - - CHICAGO STORE: 570 WEST RANDOLPH ST.

NEW POWER TO UP PROFITS

MILLERS FALLS PORTABLE ELECTRIC TOOLS

MILLERS FALLS TOOLS SINCE 1868

MILLERS FALLS engineers are among the most alert in the industry. And so the great Millers Falls line of electric tools has been constantly improved to meet new conditions and new requirements. Range of speeds and capacities has been increased . . . new tools have been added. Somewhere in this broad line you'll find just the power *you* need to improve the complexion of your production cost sheets — tools with speed, size and capacity to suit almost any job, *exactly*.

Recent developments demand your attention. A trial on your own work *will cost you nothing* and may *up* your profits amazingly.

MILLERS FALLS COMPANY

GREENFIELD · MASS.

WANT BETTER DRILL PERFORMANCE?

. . . Grind them on a Sellers

Many factors enter into getting the maximum production from a drill point—correct tool steel, proper cutting oil, the most efficient feeds and speeds, and the right angles of clearance and inclination.

Sellers Drill Grinder at Curtiss Wright Corp. Buffalo, New York

Investigate the best drill steel for the particular material you are drilling.

But as important as any one of these single requirements is the accuracy with which the drill point is ground. If the angles of inclination are unequal or if the lands are ground to different lengths, over-sized holes, or holes slightly out of round, will result and the drill will become dull prematurely.

Proper cutting oil will greatly increase not only drilling speeds but also drill life.

118° is no longer good practice for grinding all types of drills. Check with your tool engineer for proper specifications.

More and more manufacturers are using Sellers Drill Grinders because they find these grinding machines produce drill points that not only drill faster, and more accurately, but also drill more holes before needing regrinding. And that is important in industries where time is short and production is going at top speed.

There are three sizes of Sellers Drill Grinders. Write for complete information today.

You will find chip-breaking grooves very helpful.

William Sellers & Co., Incorporated
1626 Hamilton Street, Philadelphia, Pa.

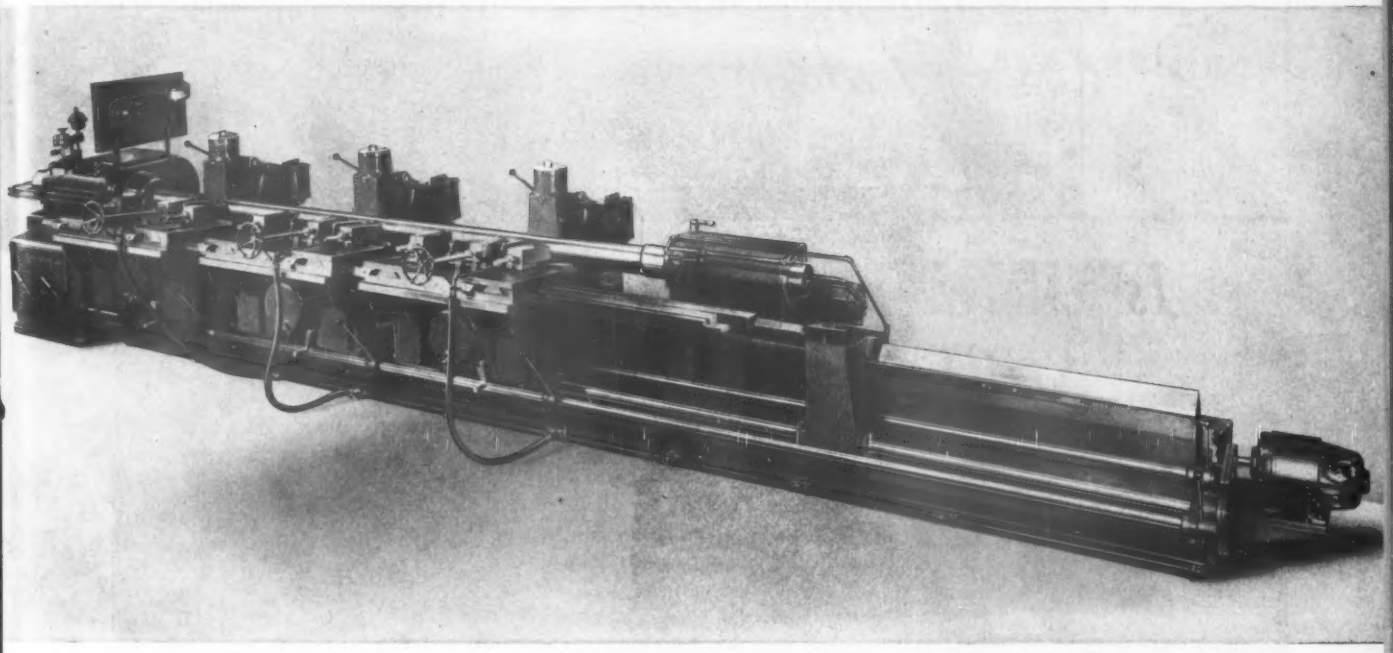
FOUNDED SELLERS 1848

Sellers

MACHINE OF THE MONTH

PREPARED BY THE SENECA FALLS MACHINE CO. "THE Lo-swing PEOPLE" SENECA FALLS, NEW YORK

NEW MODEL LS Lo-swing TURNS LARGE GUN BARRELS



Problem: To increase production on turning operations of gun barrels up to 14" diameter by 21' long.

Solution: This job was being done on a conventional Gun Lathe. There being a limit to the speeds and feeds which the tools would stand, the only way to further increase production was to use multiple tooling. Using multiple tools meant that the barrel must be rigidly supported by steady rests while being turned. The Lo-swing method with carriages on the front which will pass the tail-stock and the steady rests which, in turn, rigidly support the work seemed to be the best answer. As no Lo-swing large enough for this work had been built, the large Model "LS" Lo-swing was designed for the job. Nine tools were mounted on three carriages to turn the straight diameter tapers and contours simultaneously while three roll steady rests support the work. By this method the length of the longest cut was reduced to 32" and the production on the turning operation was stepped up to one per hour.

To facilitate setup, the carriages can be rapid traversed either forward or backward independently or together. To make for easy chip disposal, the rear of the bed slopes down at a 20° angle.

While a constant speed AC motor could be used for the main drive, a DC variable speed motor was used so that the most efficient cutting speed could be exactly and instantaneously obtained. The complete length of the barrels was turned in one operation, the work being driven from a slot in the muzzle end and expanding centers locating in the bore were used to maintain concentricity.

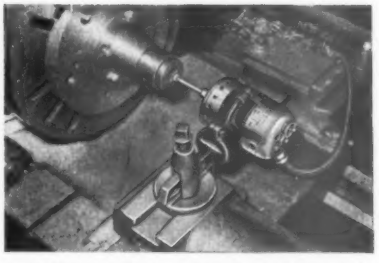
Is "Waiting For Big Machines" Stifling Your Production?

STANLEY UNISHEARS often eliminate need for costly, complicated trimming dies. No. 144A, shown, cuts any sheet material up to 12 gauge hot rolled steel. . . .

"Mighty Midget" Unishear, above, costs only $54.00, cuts sheet material up to 18 gauge hot rolled steel. Follows curves, angles, scribed lines to cut any shape accurately.

Many of the operations you've thought of as "big machine" jobs can be handled accurately and quickly, in regular production, with one of the many rugged, low-cost Stanley Electric Tools. Ready for prompt delivery from a nearby distributor, this line includes Stanley Unishears, for cutting sheet materials; Toolroom Grinder, Contour, Flexible Shaft and heavy Portable Grinders; Electric Hammers, Drills and Saws. Investigate the jobs these tools will do; a Stanley distributor will demonstrate any of them. Or write for literature. Stanley Electric Tool Division, The Stanley Works, 149 Elm Street, New Britain, Conn.

STANLEY
Electric Tools

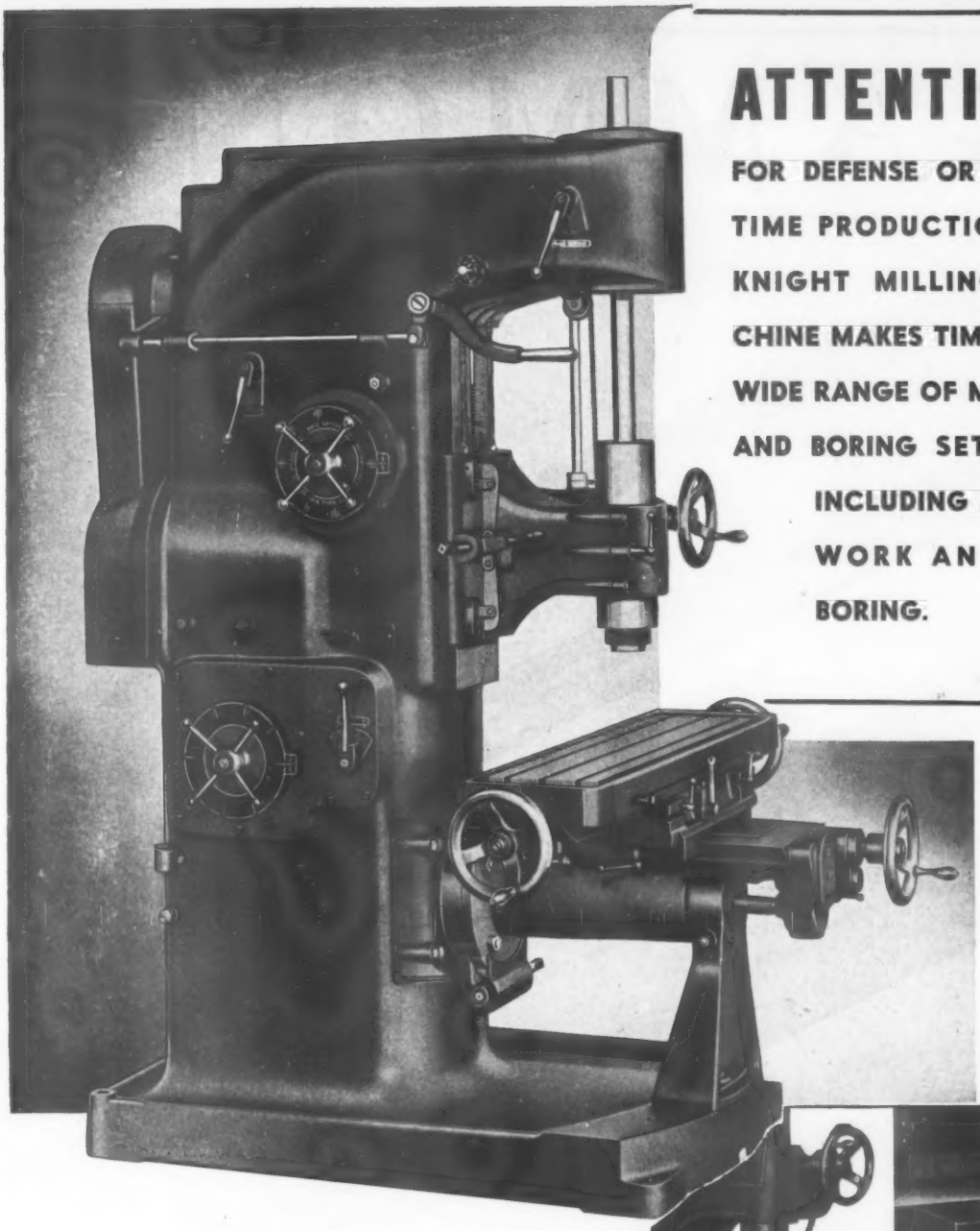


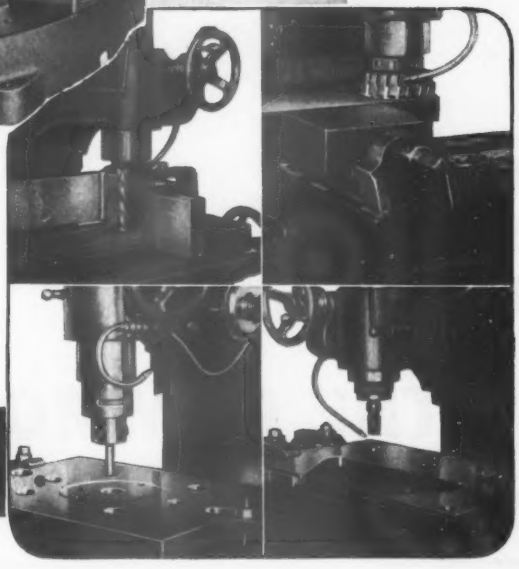
STANLEY TOOL ROOM GRINDER is powered by full ⅜ H. P. motor, drives shaft at 18,000 R.P.M. Used either free hand or in milling machine, shaper or lathe.

Excellent for external and internal grinding on dies, punches, special machine parts, spiral cutters, lathe centers, metal cutting in non-ferrous metals. Drives emery wheels up to 1½" x ½".

ATTENTION!

FOR DEFENSE OR PEACE TIME PRODUCTION — A KNIGHT MILLING MACHINE MAKES TIME ON A WIDE RANGE OF MILLING AND BORING SET-UPS— INCLUDING ANGLE WORK AND JIG-BORING.





Plus its versatility, the Knight has the power for heavy cuts —speed for light milling and accuracy to insure highest quality results. In looking for production advantages find out how the KNIGHT Miller can help you.

Write for New Catalog

W. B. KNIGHT MACHINERY CO.
3920 WEST PINE
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GAMMONS

REAMERS

Helical Taper Pin Reamer
Helical Chucking Reamer (Patented)
Helical Die Maker's Reamer
Duplex Hand Reamer
Taper Pin Reamers—Morse Taper Shank

Quality
Service
Dependability

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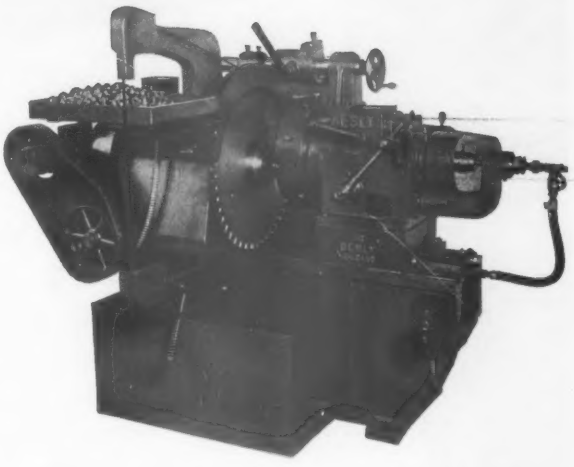
THE GAMMONS-HOLMAN CO.

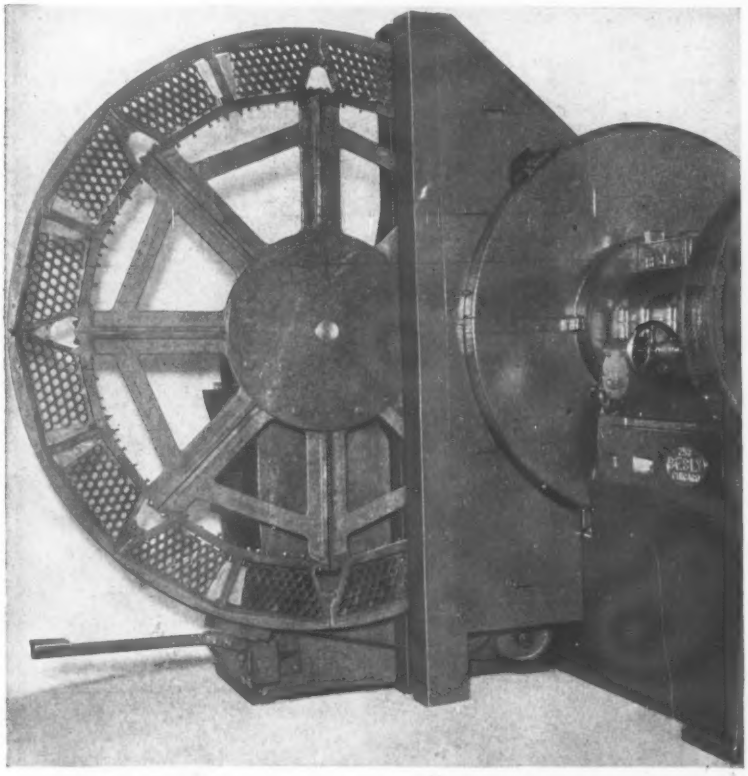
Originators of the Helical Taper Pin Reamer

MANCHESTER **CONNECTICUT**

BESLY BUILDS THEM...



from the smallest to the largest. Double Spindle Disc Grinders with grinding members from 12" to 72" diameter. With Rotary Feed, Hydraulic Travelling Table, Roll Feed, Power Oscillating Fixture, Hand Operated Swinging Fixture and various other devices for feeding work. Always equipped with Besly Titan Steelbacs, the Resinoid Bonded Bolted-On Abrasive Members, 1", 2" or 3" thick. • These machines are unequalled for production grinding of—coil springs, piston rings, piston pins, carbon brushes, thrust washers, bushings, nuts, wrenches, pliers and similar parts. If you want to finish two opposed surfaces simultaneously, consider the Double Spindle Besly Grinder.

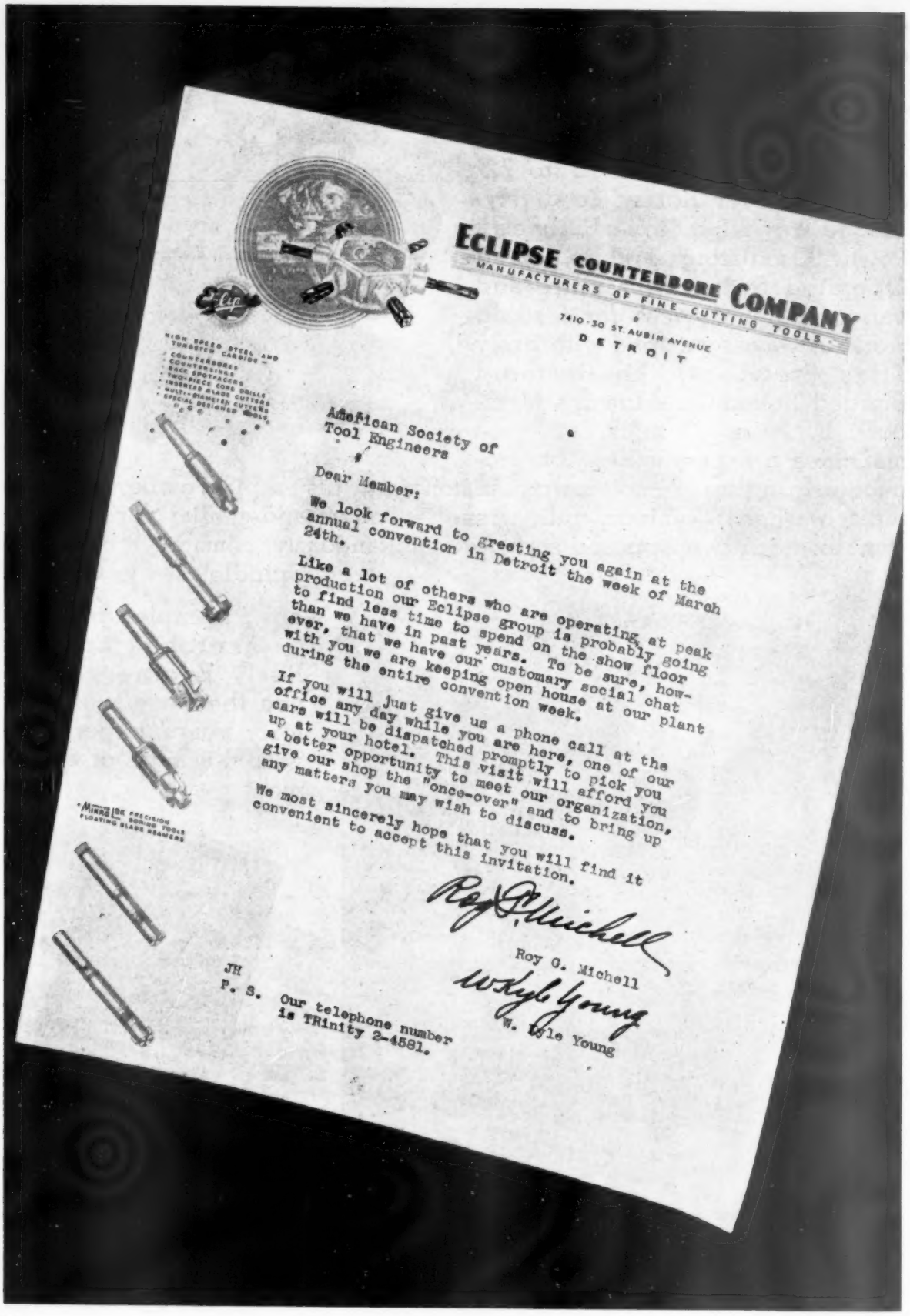


•Send samples, drawings or sketches and let Besly Engineers give you the benefit of their forty years' experience with this type of equipment.

Write for your copy of Booklet on Besly Titan Steelbacs.

CHARLES H. BESLY AND COMPANY

118-124 NORTH CLINTON STREET ★ CHICAGO, ILLINOIS



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MANUFACTURERS OF FINE CUTTING TOOLS

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DETROIT

HIGH SPEED STEEL AND TUNGSTEN CARBIDE

- COUNTERBORES
- COUNTERSINKS
- DISC SPOTFACERS
- TWO-PIECE CORE DRILLS
- INSERTED BLADE CUTTERS
- MULTI-DIAMETER CUTTERS
- SPECIAL DESIGNED TOOLS

MIRACLOK PRECISION BORING TOOLS FLOATING BLADE REAMERS

American Society of
Tool Engineers

Dear Member:

We look forward to greeting you again at the annual convention in Detroit the week of March 24th.

Like a lot of others who are operating at peak production our Eclipse group is probably going to find less time to spend on the show floor than we have in past years. To be sure, however, that we have our customary social chat with you we are keeping open house at our plant during the entire convention week.

If you will just give us a phone call at the office any day while you are here, one of our cars will be dispatched promptly to pick you up at your hotel. This visit will afford you a better opportunity to meet our organization, give our shop the "once-over" and to bring up any matters you may wish to discuss.

We most sincerely hope that you will find it convenient to accept this invitation.

Roy G. Michell

W. Wyle Young

JH

P. S. Our telephone number is TRinity 2-4581.

LONGER-WEARING

FOR PLASTICS...

...now easy to make of

NICKEL
ALLOY STEEL

Larger plastic parts, needed in greater quantities, demand molds that can stand higher pressures for longer runs. Soft steel molds, though easy to make, wear out too quickly. So now special alloy Nickel steels are used for molds.

For years HENRY DISSTON & SONS, INC., Philadelphia, depended upon Nickel alloy steels to produce saws and tools that stand hard wear. To improve molds for plastics Disston engineers developed "Plastalloy," a Nickel alloy steel which can be hobbed into shape very easily, then carburized and case hardened to a uniformly smooth and accurately contoured surface. The "Plastalloy" molds pictured above were made by the NEWARK DIE CO., Newark, N. J.

A Little Nickel Makes a Big Improvement

"Plastalloy" is a very low carbon steel containing Nickel, balanced by other alloying elements. This composition develops high core strength and high surface hardness after heat treatment. The dense grain guards against pits or cracks which would mar mold faces. Under heat treatment, Nickel steel molds resist warpage and distortion, maintain accurate profiles that speed assembly of plastic parts.

Added toughness and strength of Nickel alloyed steels and irons lengthens time between refinishing, minimizes breakdowns, helps keep production rolling rapidly. Your questions about jigs, tools, dies and equipment made from Nickel alloyed materials will be answered promptly. Please address:

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK, N. Y.

Increase Production this Easy Way

Defense production is being speeded at many points by the performance of Hannifin Hydraulic Presses, designed to simplify handling and increase the accuracy and uniformity of work.

An example is the 20-ton shell marking press which provides a rapid, automatic cycle, several times faster than former methods. Pressure-governed reversal of the ram on the working stroke provides uniform marking and makes exact die adjustment unnecessary. Both maximum pressure and ram stroke are adjustable.

The circular indexing table has six mandrels, and is synchronized with the ram stroke. The operator has only to start the press, and load and unload the fixture as the table advances.

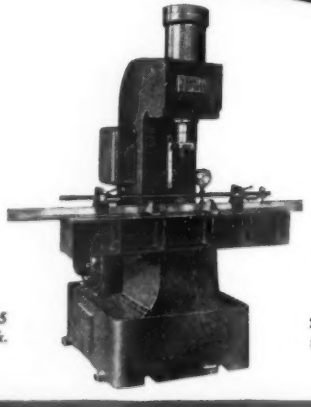
Proper application of hydraulic power and controls, based upon more than 30 years of specialized experience, enables Hannifin engineers to take the hard labor out of many different kinds of production operations. Easier handling, provisions that foster accuracy and uniformity, and rapid operating cycles are of vital importance in meeting today's production needs. Write for bulletins describing Hannifin Hydraulic Presses, or consult Hannifin engineers for recommendations.

HANNIFIN MANUFACTURING COMPANY

621-631 South Kolmar Avenue • Chicago, Illinois

Detroit Representative: R. A. Bean, Hayward Building
4829 Woodward Avenue · Telephone Columbia 4949

20-ton automatic press with indexing table for marking shell cases. Adapted to many other operations.



Hannifin Hydraulic Presses are available in many types, capacities 5 tons to 300 tons, for straightening, press-fit assembly, and similar work.

20-ton straightening press with finger-tip sensitive pressure control.

HANNIFIN Hydraulic Presses

The Tool Engineer

It is for Us, the Tool Engineers

THE course of the present world war has been such as to make it clear to everyone that this "is peculiarly a war of machines—of airplanes, of tanks, of mechanized naval equipment—and of the industrial plant and equipment which make the fighting instruments possible," points out the Brookings Institution in an economic analysis made possible by the Falk Foundation.

This major alteration in the way in which wars are fought is responsible for a shift of focus from the soldier in the trenches to the machinist in the factories; from Captains in the Army to Tool Engineers in industry. This shift of emphasis raises a crucial question of national defense policy: Shall we obtain the increased output of armaments by building additional plant capacity, or shall we convert plants now engaged in the production of consumer goods into munitions establishments?

After an analysis of this question the Brookings Institution concludes that "the magnitude of the program is not such as to require a profound disorganization of the economic system or a reduction of living standards for the masses." In the early stages of the program it is believed that an appreciable expansion of consumer income will be no handicap, but as the program enters a second stage in which every bit of now-existent slack is gone, there will have to be a combination of plant expansion and plant conversion, with resultant decrease in consumer production.

As a rough generalization it might be said that government as a whole prefers *expansion* because of the consumer (and voter) unrest which might follow a curtailment of consumer production, while industry as a whole inclines to *conversion* both because of the fear of idle capacity after the crisis is past and the build-up of a certain latent consumer demand which might help ease us out of the boom.

Although some middle course will doubtless be taken it is important that we keep industry and the nation in the stage of expanding defense and consumer production as long as possible, for in the end we know that it is through non-defense production and consumption that the profits will be made which will carry the burden of our defense efforts.

Extension of this first stage can be accomplished thru the efforts of Tool Engineers in increasing efficiency of machinery and tooling methods. An extended period of slack has left industry saddled with many outdated methods and obsolete machines.

This year's Machine and Tool Progress Exhibition will be an education to those who attend. Here is no mere convention; no mere opportunity for a winter vacation. Here is a dead earnest part of the defense program; and opportunity for you to learn how to get the last ounce of production, the highest point of efficiency, out of the equipment you have and can secure. Concentrated in a short time and a small space are the ideas which have been developed to help you.

The question is not "Can I spare the time to go?" but rather "Can my plant afford to get along without these new ideas and methods?" It is for us, the Tool Engineers, to key industry to a new high of efficiency and to leave no idea or method unconsidered in doing it. This is your patriotic duty.

It may not be as bad as you think

If your new machine tools can't be delivered till April —or June—or September—don't throw up your hands. Instead, devote serious thought to what small tools can do for you—NOW.

Our files are full of concrete examples of how "G.T.D. Greenfield" Taps, "Acorn" Dies, and other *Greenfield* tools have enabled manufacturers to increase their machine speeds and consequently increase production.

Don't throw up your hands. Study your shortages from the small tool angle. There is a very excellent chance that a "G.T.D. Greenfield" engineer can show you how one or another of the many *Greenfield* Taps which are made for specific jobs or metals may increase your production per machine by a substantial percentage. If you are engaged in defense contracts, you can not afford to overlook any possibility of increasing your, and thus the country's, productivity in these vital times.

Ask for a "G.T.D. Greenfield" Engineer's help. Your problem may not be nearly as difficult as you think.

GREENFIELD TAP & DIE CORPORATION
Greenfield, Massachusetts
Detroit Plant: 2102 West Fort St.
Warehouses in New York, Chicago, Los Angeles and San Francisco
In Canada: Greenfield Tap & Die Corporation of Canada, Ltd. Galt, Ontario

GTD GREENFIELD
Taps • Dies • Gages • Twist Drills • Reamers • Screw Plates • Pipe Tools

Cadillac Square in the heart of downtown Detroit, at the intersection of Woodward and Michigan Avenues, is the hub of a wheel that includes the many great industrial plants that have brought the automobile to America and linked a nation with a myriad of turning wheels.

Education for National Defense

Will be Theme of A.S.T.E. Show and Meeting

Detroit will play host to the American Society of Tool Engineers for what promises to be the greatest Exhibition and Convention in the history of the Society — March 25 to 29, 1941

EDUCATION for National Defense" is the central theme upon which the 1941 Machine and Tool Progress Exhibition is being built. Some 250 exhibitors will fill Detroit's rambling Convention Hall to capacity.

The recent increase in demand for space, which has broken all records for this Exhibition, is reported to be the outcome of a rapidly growing appreciation of what the Exhibition and accompanying Convention of Tool Engineers is going to mean to the Defense Program. Closely keyed to the nation's defense preparations, the technical sessions as well as the exhibits themselves will concentrate on bringing the latest technical information plus the latest developments in tools and machines to the attention of executives and engineers engaged in the "tooling up" work of the defense program.

Displayed in Booth 264 will be tank parts from the new Chrysler Tank Arsenal showing how this work is proceeding. In Booth 245 there will be airplane motors in operation—cutaway sections will show operation, and in this same Booth the Hamilton Standard Propellor Company will exhibit, and it will be possible to study the methods of changing pitch of the blades while plane is in flight. In North Cass Hall Martin Bomber Parts will be displayed, and throughout the entire Show will be displays of vital interest to all Tool Engineers.

Some of the highlights of the various exhibits will be found in this issue (see page 66) and a complete list (to date of publication) of exhibitors and products exhibited is included (see page 63) as well as a floor plan of the Hall to aid in locating exhibits (see page 65).

Of national significance is the special preview dinner to be held before the opening of the show. Sponsored by a group of leading industrialists, including K. T. Keller, President, Chrysler Corporation; Edsel Ford, President, Ford Motor Company; Charles E. Wilson, President, General Motors Corporation; C. W. Avery, President, Murray Corporation; and A. Berit, President, Hudson Motor Car Company, the dinner will be attended by an invited number of the country's prominent executives, engineers, educators, and navy officers. Principal speaker at the dinner, which will follow a trip through the exhibition, will be Charles M. Wesson, Chief of Ordnance, U. S. Army, whose subject will be "The Job Facing Industry in Arming This Nation."

Technical Sessions held in connection with the Show will include studies of Aircraft and Naval requirements (see page 59).

A registration in excess of 30,000 is expected for the Show with special trains coming from several key cities. The Convention will give Tool Engineers an opportunity to see for themselves how the scattered units of the defense program will work together in producing the needed ordnance materials.

Overworked Tool Engineers will find this an opportunity to combine business with pleasure, for they will be able to learn much that will be helpful to them and at the same time will be able to find time for "getting away from it all."

The city of Detroit lies on the north bank of the Detroit River, which flows from east to west connecting Lake St. Clair with Lake Erie. This point of land

is the only place along the entire boundary where the United States lies north of the Dominion of Canada. Visitors making their first trip to Detroit frequently find the downtown area confusing, and for their benefit the TOOL ENGINEER has prepared the simplified map printed on this page.

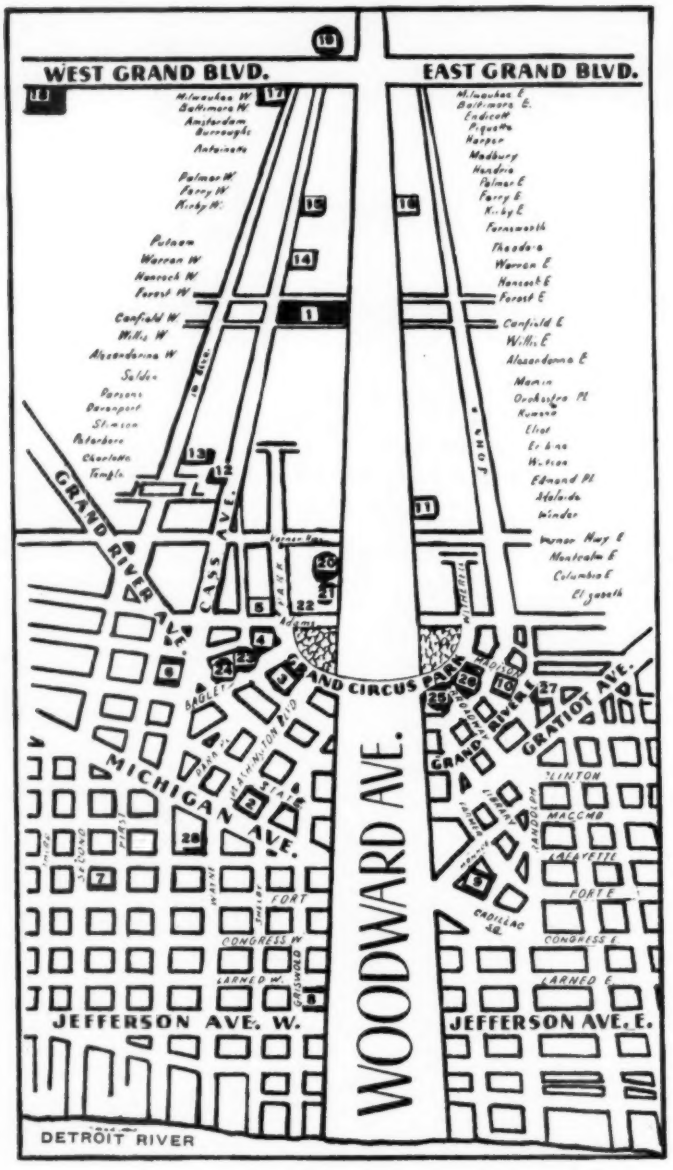
This perspective map shows the principal streets of the downtown area and the location of Convention Hall and leading hotels and theatres. The city is divided into definite districts: The financial district is located west of Woodward and south of Michigan, centering around Griswold and Congress streets. Here the city's tallest building, the Penobscot, is located, and from its observation tower on a clear day it is possible to get a view of the entire city and surrounding country. The department store district lies east of Woodward and north of Jefferson. In an area of a few blocks are located some of the nation's largest department stores. The nicer shops and stores largely lie west of Woodward centering in a district around Washington Boulevard. The theatrical district is mainly concentrated in an area surrounding Grand Circus Park. There is no area where night clubs are concentrated. They will be found scattered throughout the downtown area and in many outlying districts. With a picture of this simple perspective map in mind, and an understanding of how the city is divided into these fairly definite districts, the visitor making his first trip should not have any difficulty in finding his way about the city.

Of course, this map does not include any of the industrial sections of Detroit which lie several miles out from the center of town. No trip to Detroit is complete without a tour through some of these plants which make Detroit the industrial capital of the world.

It will be possible to make arrangements for some of these tours at Convention Hall (see page 60), and for others you will be able to secure information at the Host Booth 136 or from the City Information Bureau in Cadillac Square.

The city is served by three airlines and by numerous bus and railway lines. These facilities, combined with trunk highways from all directions, and fine hotel facilities make the city easy to reach and pleasant to visit during a convention.

Under the able direction of Frank Shuler, who has been in general charge of the exhibits, the plans are nearing completion for the biggest and finest A.S.T.E. Show and Convention ever held. It is one which should prove invaluable to every Tool Engineer—and great fun too.



TOOL ENGINEER PERSPECTIVE MAP OF DETROIT

Key To Map of Detroit

1. Convention Hall
2. Book Cadillac Hotel
3. Statler Hotel
4. Tuller Hotel
5. Briggs Hotel
6. Detroit-Leland Hotel
7. Hotel Fort Shelby
8. Norton Hotel
9. Barlum Hotel
10. Hotel Madison-Lenox
11. Hotel Detroiter
12. Hotel Fort Wayne
13. Seville Hotel
14. Hotel Webster Hall
15. The Belcrest
16. The Wardell
17. The Lexington
18. The Lee Plaza
19. Fisher Theatre
20. Fox Theatre
21. Palms State Theatre
22. Adams Theatre
23. United Artists Theatre
24. Michigan Theatre
25. Madison Theatre
26. Broadway Capitol Theatre
27. Wilson Theatre
28. Cass Theatre

Tool Engineering

Factors influencing the design of jigs and fixtures, an outline of units used in fixture construction, and representative examples of tool installations.

TOOL ENGINEERING, in its broad sense, deals directly with practically every manufacturing procedure from raw materials to the finished product, and is responsible, to a great extent, for the vast advances that have been made in high-production and economical manufacture. The Tool Engineer, being responsible for successful manufacture, must then be able to route and plan parts in quantities required, design all jigs, fixtures and tools necessary, select suitable machine-tool equipment, determine proper speeds and feeds for machining, install proper gages and inspection methods, design special machinery where needed, and then see that his ideas are properly carried out. Of all these functions, perhaps tool design is the most important phase of the Tool Engineer's duties. An efficiently designed product is no better than the tooling used for its manufacture, hence the management of any plant should provide the most adequate tool designing department in order that economical methods can be properly executed.

Having a given part to manufacture in a known quantity, tool design then centers itself around three major considerations:

1—The machine tool
2—The jig or fixture
3—The cutting tools

All three tie in together and jointly will solve any metal-cutting problem if given due consideration. Weakness in any one will offset the effectiveness of the other two, hence proper thought must be given to all three.

There are many reasons for the need of a jig or fixture. Most common are:

a—A new product
b—To replace a worn tool
c—To increase output

In preparing for the design of jigs and fixtures, it is well to consider such facts as: How many pieces must be made to warrant a fixture? How much may a fixture cost to show a saving? How long will it take for a fixture to pay for itself? What will be the profit earned by a fixture? The Tool Engineer, therefore, should check the following:

1—The cost of fixture
2—The output to be obtained
3—The profit or saving to be made

Many formulas are available for determining how practical and economical a fixture may be, but a simple means is as follows:

A=Cost of part without fixture
B=Cost of part with fixture
C=Cost of fixture
D=Number of parts required to pay for fixture.

$$D=\frac{C}{A-B}, \text{ or } \frac{\$200.}{\$1.-.25}, \frac{\$200.}{.75}=266 \text{ Pieces}$$

For many years, tools and machines for production have undergone revolutionary changes, yet while these evolutions have been rapid there still remains room for improvement. Present production methods, in many instances, are of the highest order due largely to ingenious tooling and labor-saving devices of one kind or another. However, the science of Tool Engineering in all its fundamentals is not thoroughly recognized, and in many plants tooling is only about 50% efficient, or at least far from what it should be.

Tool design is very often worked out by using ideas in vogue in the shop where the tools are to be used with the result that the design is apt to be influenced by previous practice or tradition, rather than to incorporate originality as may be needed.

"Don't follow traditional practice, always try to originate", is perhaps one of the best slogans a Tool Engineer can adopt. Remember, you can get to the same place in many ways. You can walk, go on the back of an animal, ride a bicycle, drive a car, take a train or fly in a

By
FRANK W. CURTIS
Chief Engineer
Milling Machine Division
Van Norman Machine Tool Co.

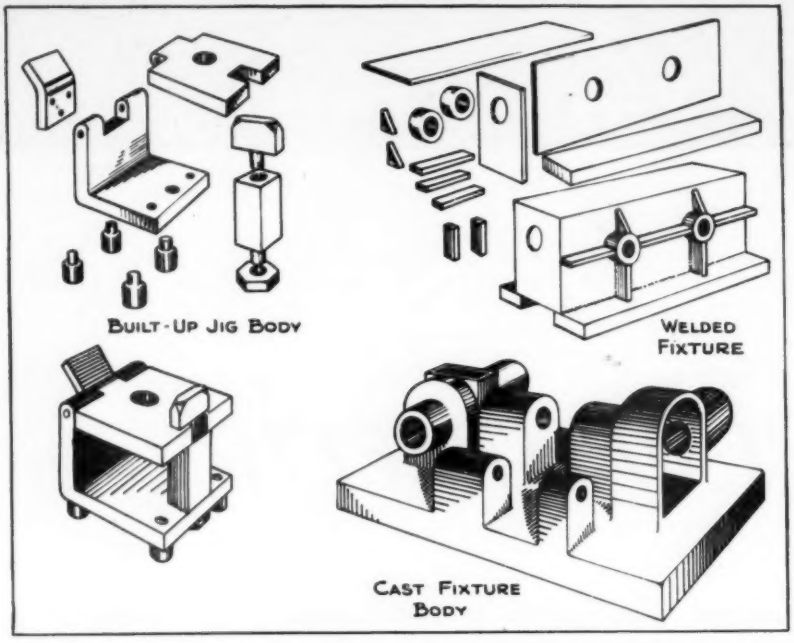


Figure 1

Three basic ways of designing jigs.

plane. The problem lies in finding which is the best under existing conditions.

Tool Engineering requires a knowledge of principles and the ability to apply them correctly. Mechanical principles are more or less fixed and do not change as designs do. Therefore, the engineer whose knowledge of tool design is based on firm principles is more apt to be original and progressive, and his designs will be practical and productive.

Competitive technical advantage of one plant over another usually lies more in the quality of jigs and fixtures and small tools used rather than in machine tools. On this account, tool design is recognized today as one of the most important factors in the manufacturing field. Those engaged in solving tooling problems realize the importance of the science because it is the foundation on which modern manufacturing is built.

There are three ways to design jigs and fixtures (*Figure 1*), namely:

1—Built-up type made from small parts
2—Cast design made from patterns
3—Welded or fabricated construction

Built-up tooling is often used where a quick or temporary jig or fixture is wanted, and is usually limited to small parts. This form of construction lends itself to the use of several small parts which can be screwed and doweled together, enabling the tool to be finished in a relatively short time. Manufacturers of small parts, such as cash registers and typewriters, also use built-up jigs and fixtures, very often standardizing on certain designs and then building a quantity at one time for stock to be drawn out as needed. The drill jig shown is typical of this type.

Cast fixture bodies are perhaps the most common in use today. These require a pattern for the casting, which in turn is comparatively easy to machine. Welded tooling, however, is being favored in many instances because the body can often be completed as quickly as a pattern for the cast type thus saving time and expense. Machining of welded units requires a different technique and suitable cutting tools, but usually is not more difficult to handle. Other advantages of welded tooling are a lower cost, increased strength, lighter in weight, and the ability to redesign and rebuild an assembly to accommodate design changes which may require broad modifications and revisions at some later date.

Several forms of welded joints (*Figure 2*) are used in fixture design. Seamless tubing can be welded in place conveniently, or it can be cut in two to form elongated openings, discs and other sections can be welded to a plate to form locating pads, and many forms of ribs can be incorporated to strengthen assemblies as needed. The usual procedure in building welded tools is to:

(1) Cut out all parts
(2) Tack weld parts together
(3) Check assembly for correct proportions
(4) Electric weld all seams and joints
(5) Normalize
(6) Machine.

Using correct principles in fixture design is important (*Figure* 3). Always support the workpiece as close as possible to the point of machining. Overhang or unsupported projections will deflect or distort under pressure and result in inaccuracies. Locating points should be such that chips will not interfere with their function. Ease of cleaning is important. V-blocks and loose hardened members should be made where possible so that dowels are in the soft end

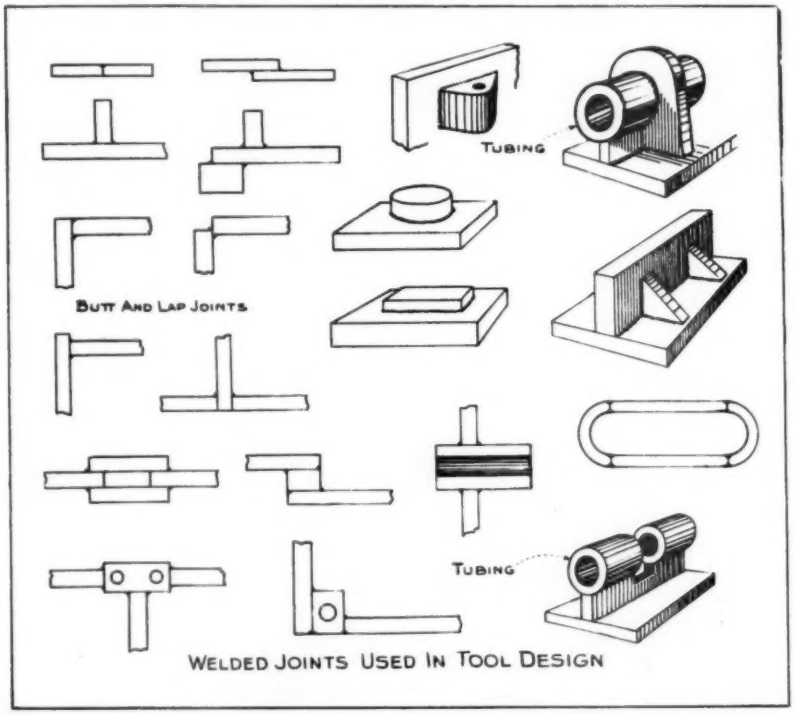


Figure 2

Sample types of welded joints.

to permit slight shifting to attain correct alignment where extreme accuracy is desired. Plenty of clearance should be provided around hand knobs to prevent injury to the operators hands. Clamping must always be arranged directly over locating points to avoid springing of work. Locating pads should not be larger than the part to be accommodated. The pad usually wears and any slight variation in subsequent lots will result in improper seating. Self cleaning locating points are by far the best. The workpiece should always be positioned as low as possible to the table. Excessive height results in vibration, chatter and deflection.

Milling fixtures should be designed with care to avoid chatter, an evil that results when weakness exists. Always be sure to mill against the solid portion of the fixture (*Figure 4*), even if added expense is required. Design cast bodies with generous radii for added strength. Sharp corners are apt to crystallize and crack. Make U-lugs large and wide. Insufficient strength around U-lugs results in breakage especially if the fixture should be accidentally dropped. Provide extra large bosses where holes are subjected to wear, so that there will be enough material around hole to permit reboring and bushing. Watch out for chips. Threaded parts should be shouldered to avoid fouling. Make all ribs as deep and as strong as possible. A little extra iron in the original design is good insurance against failure due to weakness. Whenever possible, provide for the use of set blocks and feelers to aid in setting cutters. This is a very important need in connection with setting up a milling job. Most milling machine tables have either 11/16 or 13/16-in. slots. Where fixtures may be used in either type of machine, use reversible type locating lugs which can be applied in either size table slot.

Clamps form a most important function of tool design. There are hundreds of types to select from. The principal requirement is to use the type that suits the problem. A foolproof design, with ample strength, self-cleaning and quick in operation is the usual requirement. Several designs illustrated (*Figure 5*) are self explanatory. The design of clamps offers an excellent field for originality.

Figure 3 (top)

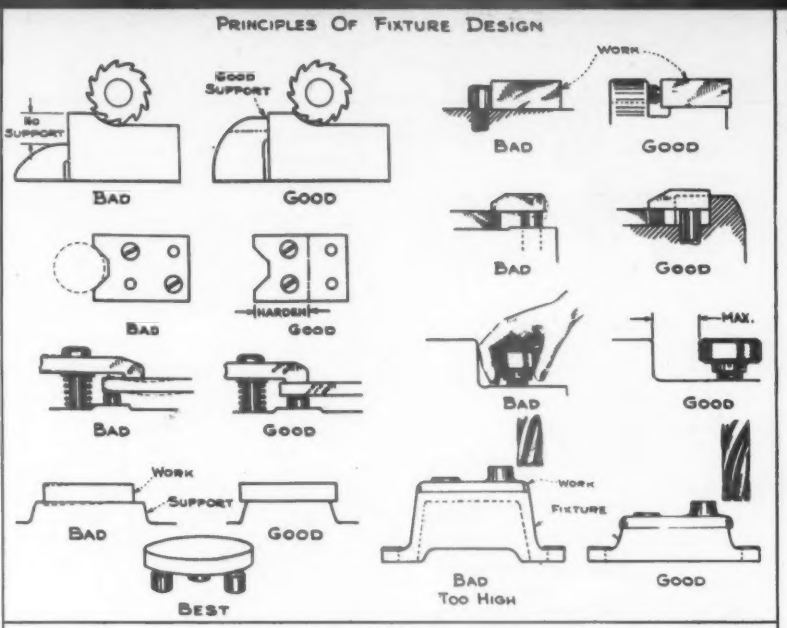
Correct principles of fixture design.

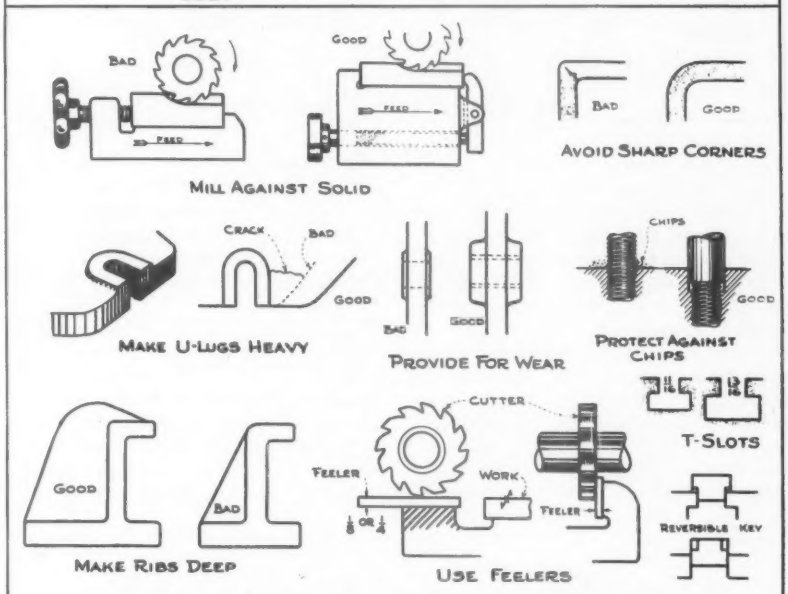
Figure 4 (center)

Always mill against the solid portion.

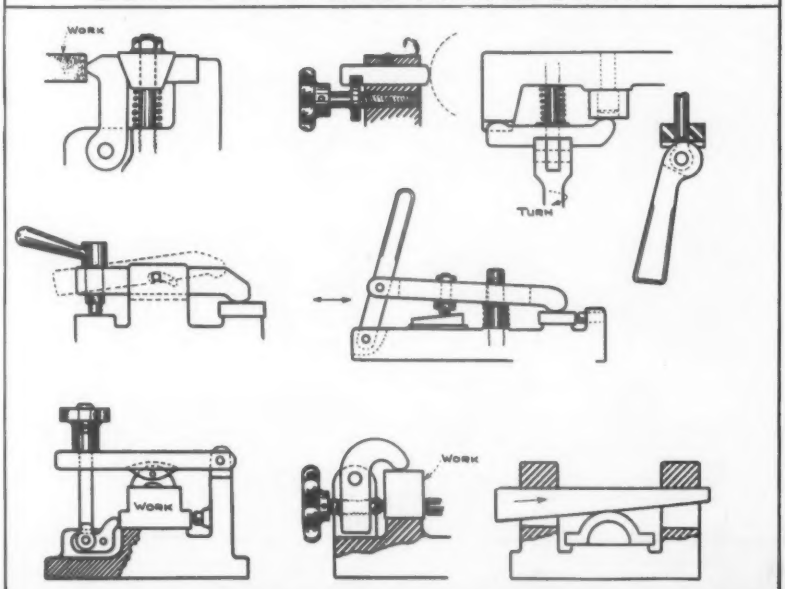
Figure 5 (bottom)

Several types of fixture clamps.





DETAILS OF MILLING FIXTURE DESIGN



VARIETIES OF FIXTURE CLAMPS

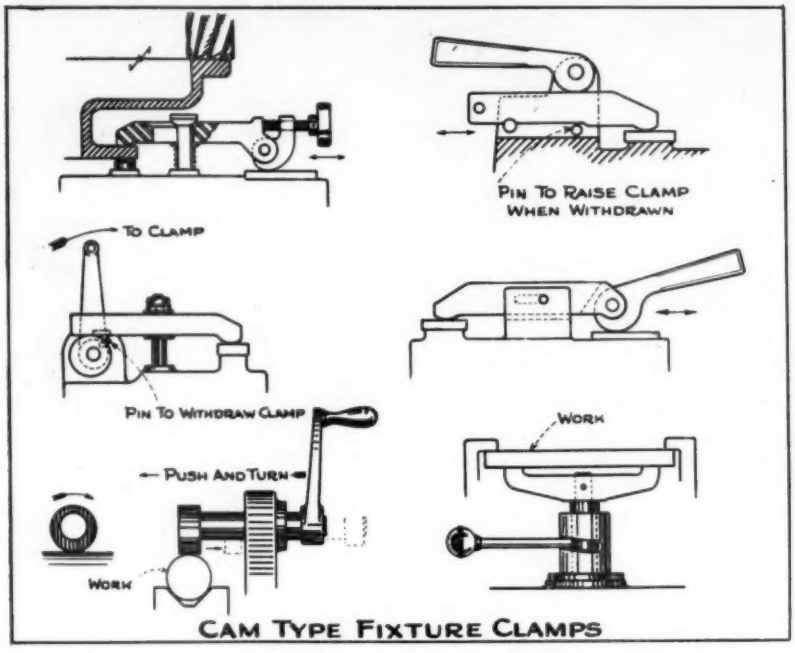


Figure 6

Varieties of cam type fixture clamps.

Cam-type clamps (*Figure 6*) lend themselves to many forms of fixtures and are usually quick and positive in operation. Where a clamp must be applied under a projecting section of a workpiece, a push-pull cam-actuated clamp will often solve the need. Very often a pin can be used in connection with a sliding type clamp which in turn will raise the clamp away from the work when the clamp is withdrawn. Cam clamps can also be arranged to slide in or out with a single motion of a lever or handle. A push-and-turn type of eccentric or cam clamp has many uses because it is quick and positive. A cam groove cut in a sleeve offers a rapid means of clamping with exceptional force and positive locking. Many of these clamps can be made as standard units in quantities and assembled on fixture castings or bases to suit a wide variety of needs.

Spring plungers, like clamps, can be made in a variety of designs and types (*Figure 7*). The screw type is of simplified form, but care should be taken in use not to spring the workpiece out of shape. The spring plunger type is the most common in use and can be adapted to high or shallow fixtures. Dust caps are very essential, especially when machining cast iron, because powdered chips and dust will result in fouling or clogging. Several jacks can be locked by a single screw through the use of equalizing pins and rollers or balls. Such arrangements save considerable time in clamping larger workpieces. Soft shoes or pins should come in contact with the plunger to avoid "mushrooming" and eventual failure. These shoes should be changed periodically and extra pieces should be provided with the fixture to avoid delay. A standard form of jack design for a given shop is a good policy. Spring jack assemblies can also be made in quantity and assembled in fixture bodies by merely reaming a hole and providing a lock screw. These save much time in fixture building, simplify pattern expense, and usually avoid difficult drilling operations especially when the jack is located in the central portion of a large base. Push-type jacks also have a broad field. They are positive in action, but care is required not to exert too much force.

Vise jaws have an extremely broad use in connection with the holding of small parts and should not be overlooked by the tool designer. Usually, only special jaws are required (*Figure 8*), which in turn can be replaced or changed very quickly. Jaws can be made to hold round parts by making various types of V-block arrangements. Extended jaws for height or width often stretch the capacity of a vise. Guide pins can be used to offer accurate alignment where close tolerances are essential. Tongue and slotted jaws serve the same purpose. Parts can be held for angular machining by making the jaws to correspond. Multiple and equalizing clamping is possible in many ways, and auxiliary clamps can be provided for holding or locating various shapes of parts. Where workpieces are located over studs it is possible to incorporate ejectors to simplify removal. The vise lends itself to use as a drill jig by merely providing the solid jaw with a drill-jig bushing. The utility of a vise will find a wide field, yet it seems to be often overlooked as the backbone of a jig or fixture.

Tungsten and tantalum carbide tools are now being used extensively in practically all metal working plants and the tool designer is called upon to provide cutters, holders and fixtures as required

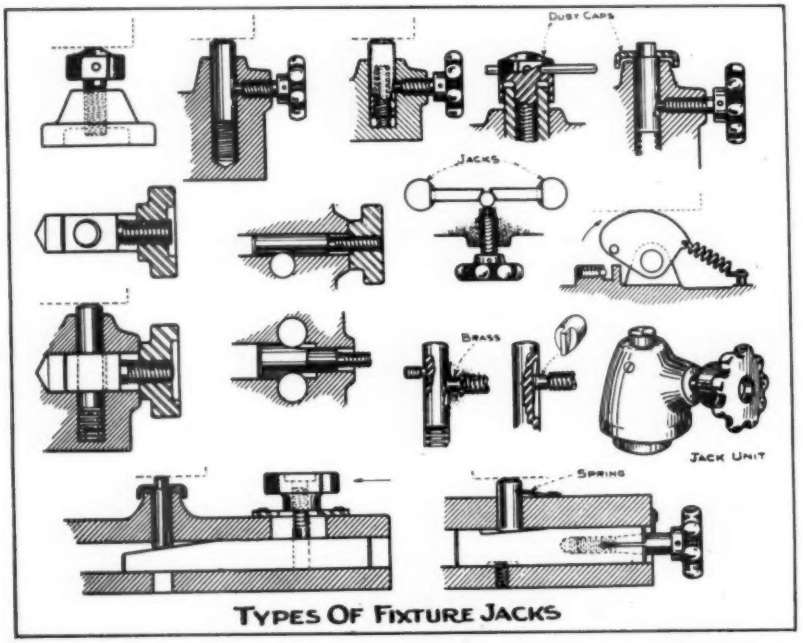


Figure 7

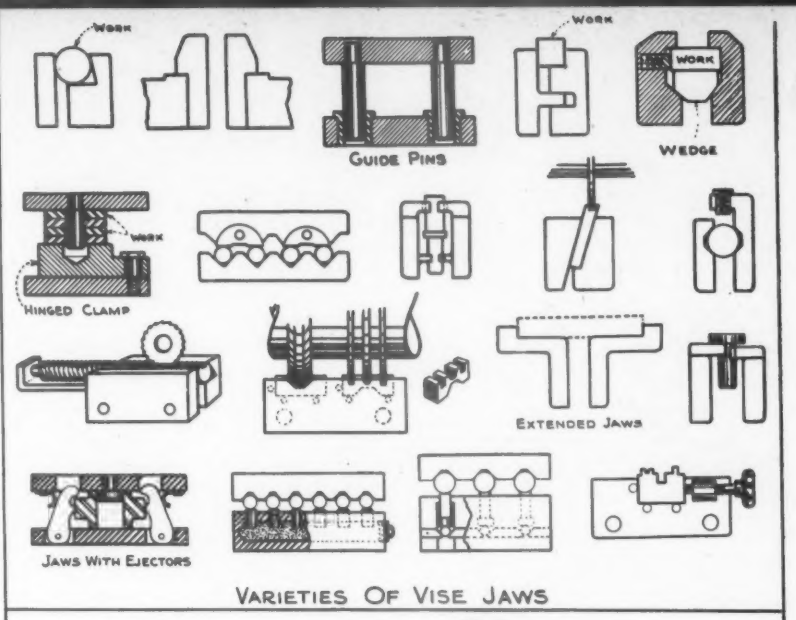
Varieties of fixture jacks.

with their use. The most outstanding requirement for T. C. tools is rigidity, first, last and always. With ample rigidity success is assured, but with weakness existing, failure is quite common. Since faster cutting with T. C. cutters is made possible, any fixtures used should be proportionately heavier and stronger to withstand the increased pressure of cutting.

The design of T. C. cutting tools must follow certain basic rules in order to assure results. The blank or tip for average cutting operations should be proportioned so that the width is twice the thickness and the length twice the width such as a 3/16 x 3/8 x 3/4 in blank (*Figure 9*). These can be termed the ideal proportions, which can be varied slightly one way or another, but any wide deviation, such as a long thin or narrow tip, is more apt to crack or fail in use. For turning operations, the shank should be at least four times the thickness of the T. C. blank so that adequate support is obtained. Tool overhang should be kept to an absolute minimum to avoid deflection and possible failure. Under a given load, deflection increases by the cube of the overhang. A tool as at "B," with 1¼ overhang will deflect eight times that shown at "A," while the one at "C" deflects sixty-four times that of "A," since the overhang is four times greater.

Because of the extreme hardness of carbides, deflection cannot be tolerated. A good rule is never to have the overhang or unsupported section to exceed half the height of the tool. Half this is still better. If the existing tool holder will not permit such an application, a special holder should be provided. In making toolblocks, the side thrust of the tool should be supported just as well as the down thrust.

The law of deflection can easily be observed by hanging a weight on a flexible scale or metal strip (*Figure 10*), and varying the overhang. If "B" is twice "A," then "S" will be eight times "R". Another way to check the difference in deflection is by merely cubing the overhang. For example, if a tool projects .100 in. normally, but is reset so that it projects .120 in., what increase in deflection takes place? Of course, .020 in. does not seem like much, but it results in 72 percent increase in deflection under a given load, since 10 x 10 x 10 = 1000, and 12 x 12 x 12 = 1728.



VARIETIES OF VISE JAWS

Figure 8 (top)

Varieties of vise jaws.

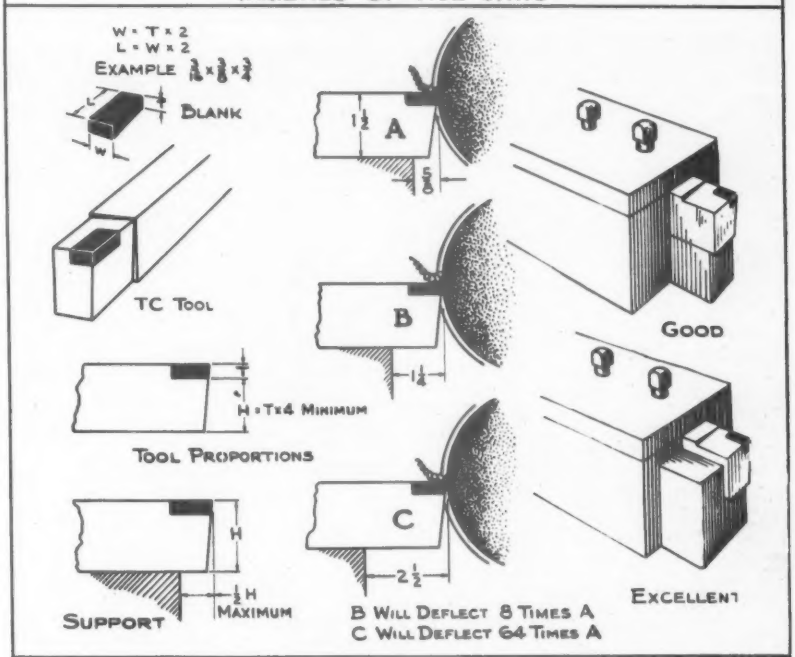


Figure 9 (center)

Design of T. C. cutting tools.

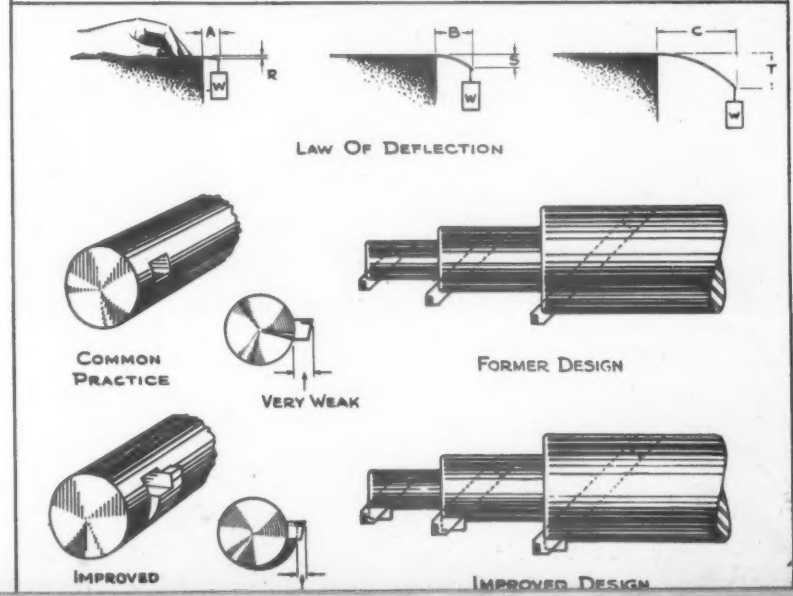
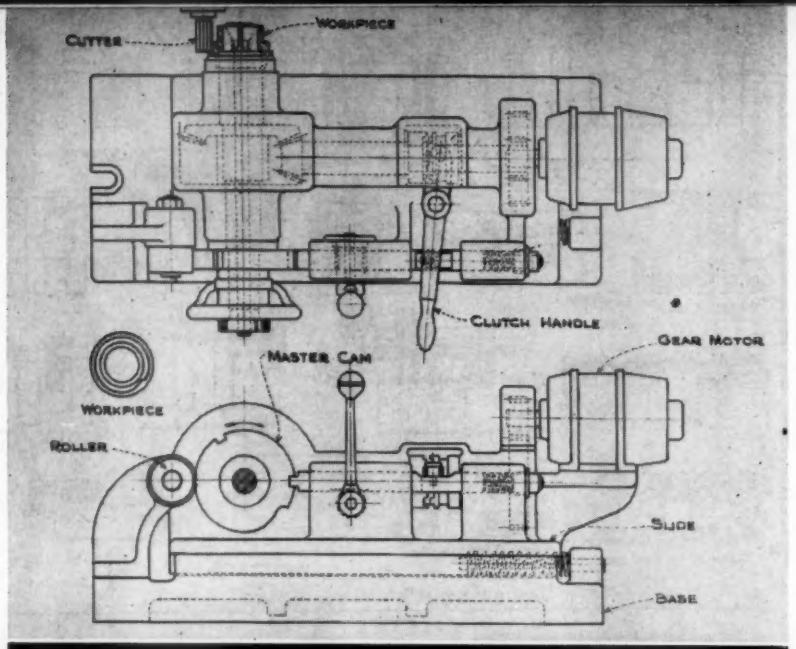
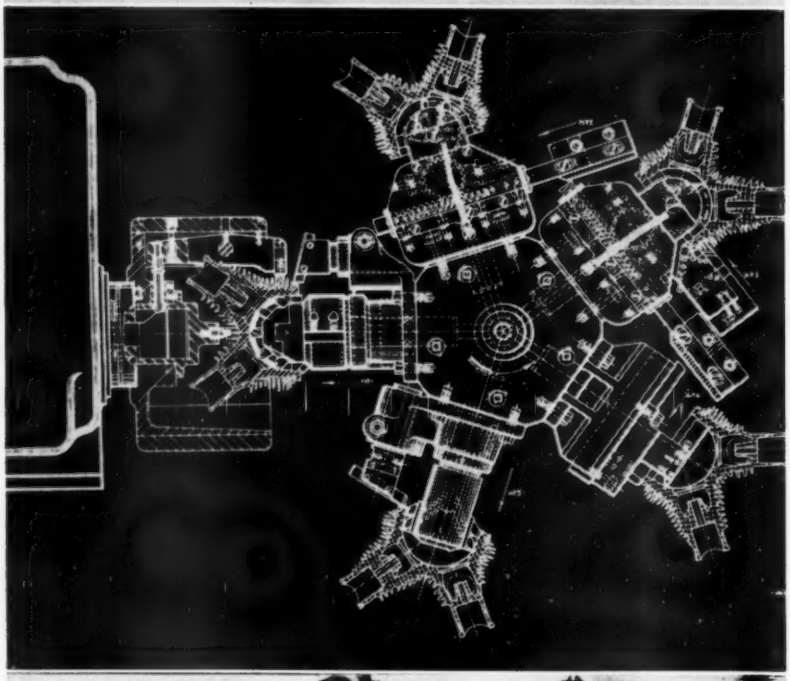
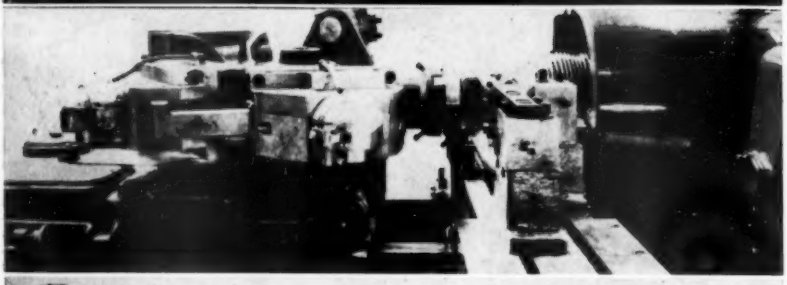


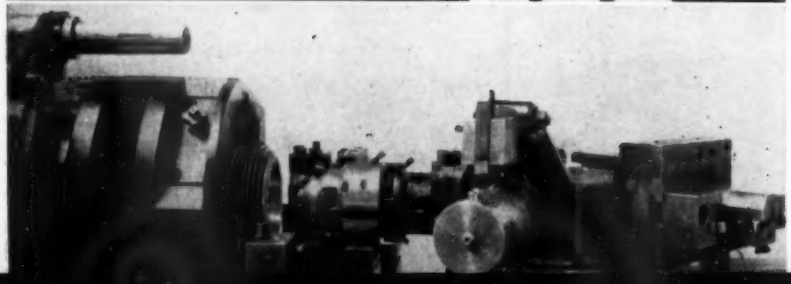
Figure 10 (bottom)

Application of law of deflection.









Adequate support can be provided in all types of tools but usually different principles must be employed. Boring bars of the common type are usually made with a through hole for the tool, which in turn hangs out over the edge. The improved practice for T. C. is to make the bar with an integral support extended beyond the bar where the tool projects so that the tool gets underneath and side support. The difference in performance will result in a better finish, greater accuracy and more pieces per grind. The same procedure should be carried out for multiple bars as shown.

Assembly layouts for jigs and fixtures should be made as complete as possible, especially where the design involves a good many parts. Detailers should be able to draw all parts from the assembly, and the toolroom, of course, requires a layout that expresses the complete design sufficiently to avoid delay for further information. A representative layout is the fixture for milling a cam face in a clutch part (*Figure 11*). The work spindle is driven by a gearmotor through a clutch. The work is held by a draw-in collet, and the rotation of the spindle is started by engaging the handle with the knob. Disengagement is automatic at the end of the cut, but another handle is provided to throw out the clutch in case of emergency. The upper section of the fixture is mounted on a slide, controlled by a master cam on the spindle and a roller mounted on the base.

Tool layouts for production turret lathe operations usually require careful planning. A capacity diagram of the machine is very essential, this in turn being the basis from which the fixture and tools are designed. A set up for machining an airplane cylinder head (*Figure 12*) is representative of the amount of details involved. The inside dome is roughed by a multiple tool head, then rough and finish machined by spherical generating tools, and finally faced, bored and turned by other turret tools. Front and rear views of this set up (*Figure 13*) show the tools in actual operation.

Fixture design will vary depending on the type of product and output required, but usually the same basic principles are involved. Provision should be made to load the work easily, and the fixture must be rigid and accurate to offer interchangeable results. A fixture for boring ball

Figure 11 (top)

Fixture for milling cam face.

Figure 12 (center)

Machining airplane cylinder head.

Figure 13 (bottom)

Front and rear views of set up in Figure 12.

bearing holes in a milling machine knee (*Figure 14*) is representative of a tool for a somewhat larger part than usually encountered, where extreme accuracy is essential but where the output is low. This fixture has slip bushings at each end and is mounted on an indexing table so that all bores can be completed at one setting. The bores are held to within .0003 in., and their center distances with one another to .001 in.

Another unusual form of fixture for a large part (*Figure 15*) is the one shown for tapping radial engine crank cases, arranged for 18 cylinders, each opening of which requires six tapped holes. The fixture holds one piece which in turn is clamped by movement of a slide through a handwheel. The fixture is indexed hydraulically and has nine indexing positions. After the first bank of nine sets has been tapped, the work is withdrawn from the fixture, turned 180 degrees, and then reclamped for the tapping of the other bank of 9 sets of holes. The entire fixture is mounted on a base slide so that it can be withdrawn for loading, and advanced under the spindle of the machine for tapping, this movement also being hydraulically controlled. This fixture represents an excellent example of advance Tool Engineering principles.

A two-station boring fixture for aircraft cylinder barrels (*Figure 16*) shows a method that permits loading of one fixture while the other is in use. The fixture carriage is mounted on a slide that is indexed from one side to the other by a handwheel. Correct indexing location is attained by a fixture locking pin that engages with the carriage. Clamping is by means of a hinged clamping bracket at the lower end of workpiece, and two strap clamps at the top.

For contour milling radial engine timing cams the machine with tandem heads (*Figure 17*) is arranged with a fixture and master cam assembly, so that in one revolution of the work spindle, the intake and exhaust lobes of the workpiece are milled simultaneously. The timing cam is held hydraulically by means of a clamp plate and C-washer, and the cycle is started by a push button, after which the operation is completely automatic.

A set of rules for the design of tooling is valuable in many ways. Such a list will help the younger men to learn the essential requirements of tool design as well

Figure 14 (top)

Fixture for boring ball bearing holes.

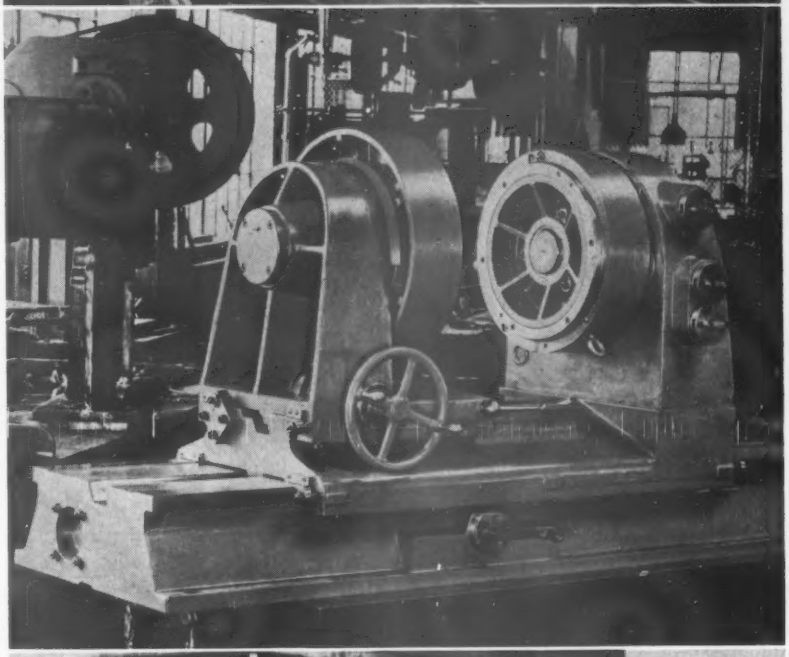


Figure 15 (center)

Unusual fixture for tapping radial engine crankcase.

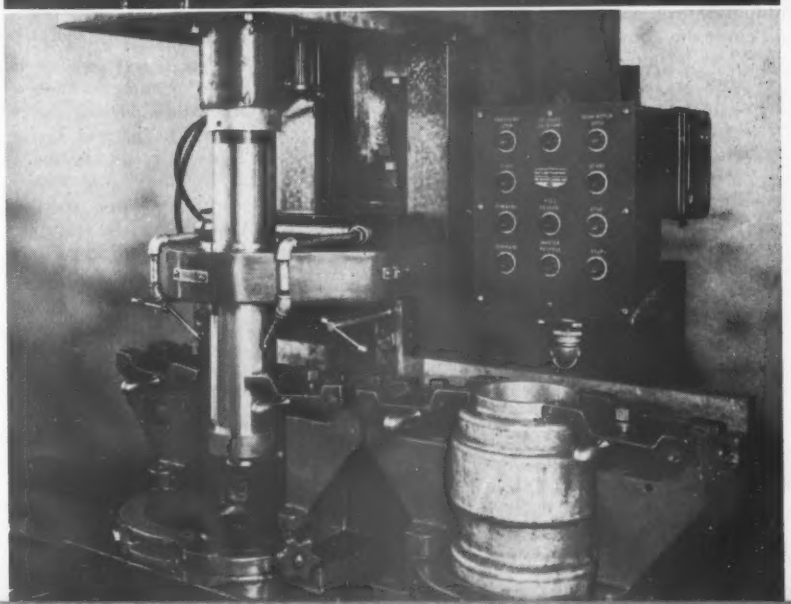


Figure 16 (bottom)

Two-station boring fixture.

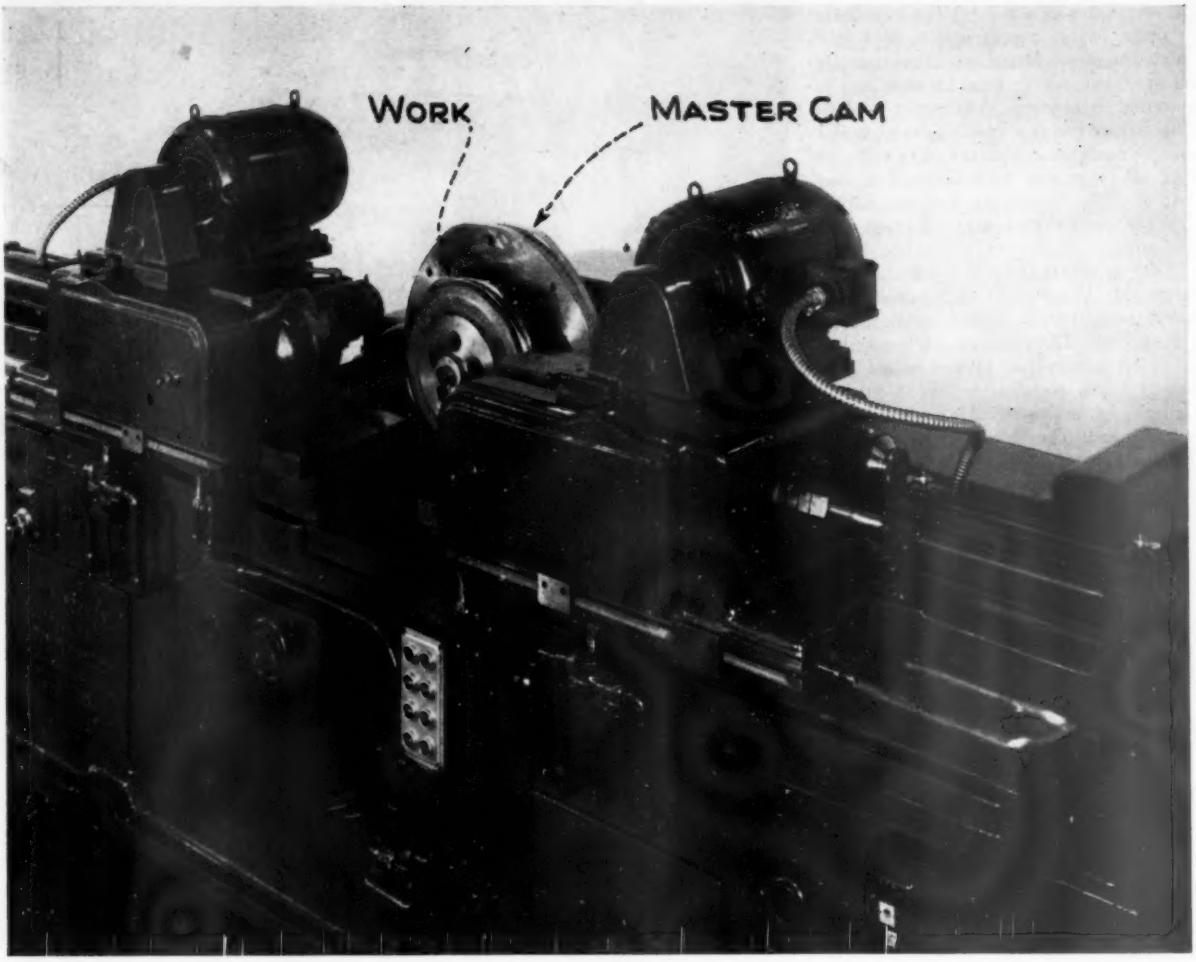


Figure 17

Contour milling radial engine timing cams.

as to serve as a guide for experienced designers who might overlook basic needs. These rules will vary depending on the type of product being made and shop equipment available; however, this list will cover the average conditions:

1. Never be in too great a hurry. Many parts are to be made and a slight mistake may result in a serious loss.
2. Be sure to have full information before proceeding. Consult shop executives and get all the facts.
3. Every small saving in time counts, so try to create an efficient design that will assure results.
4. Make the fixture layout as simple as possible, consistent with its need but without sacrificing efficiency.
5. Do not copy former designs, attempt to create something better. Originality is essential to good tooling.
6. Remember that rigidity is essential first, last and always. A rigid fixture will stand abuse better.
7. Try to make the jig or fixture foolproof, such as to permit loading only in the correct manner.
8. Get proper locating points and clamping points before starting design. Never cut against a clamp.
9. Have all locating points in view if possible. Easy cleaning is necessary. Quick location is important.
10. Try to make all units integral. Loose pieces get lost easily and may hold up output.
11. Round all corners to safeguard the operator. Consider safety features. Accidents are serious.
12. Parts subjected to wear should be made of a good alloy steel, hardened and ground.
13. Arrange clamps and supports so that the workpiece cannot be sprung. Rapid and positive clamping pays.
14. Be sure to provide ample chip clearance. Chips will cause misalignment and spoiled parts.
15. Consider the importance of coolant and provide for an ample supply to reach cutting tools freely.
16. Check drawings thoroughly. Will the fixture fit machine? Can it be made economically? Errors are costly.

In conclusion, let us not forget that Tool Engineering has given us indirectly many luxuries which ordinarily we could not afford. The automobile is an outstanding example, then, too, there is the radio which can be found in every home. Next, will come television and there will be others to follow, all made possible through high production tooling. To maintain these luxuries, we must continue to be modern, and to originate rather than to follow tradition. Tool Engineering has not reached its height, because new developments and ideas will be introduced continuously which far surpass previous methods that in themselves were considered the last word.

Get MORE PRODUCTION from your PRESENT TURRET LATHES

20% MORE PRODUCTION *with this* NEW WARNER & SWASEY SLIDE TOOL *on an* OLD TURRET LATHE

● On a grooving operation on an aluminum fan housing, production was stepped up 20%. The diagrams show how this new slide tool handles boring, recessing, grooving, facing, inside facing, back facing operations. The feed lever can be set in any position. One complete turn of the handle moves the cutter two inches. Adjustable stops and micrometer dial govern slide travel and assure accuracy of cuts. This slide tool, which handles operations never before combined in one tool, is only one of 596 improved tools that can help you produce more from your present turret lathes. Write

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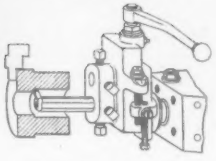
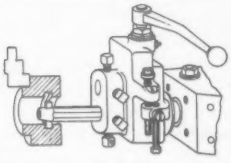
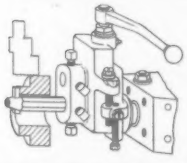


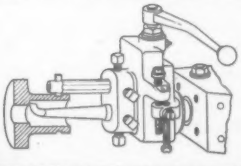
1. Deep Hole Facing. When end of bore is reached, the operating lever moves the Angular Stub Boring Bar, and deep hole face is cut squarely and accurately.



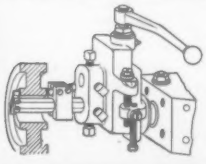
2. Recessing. Here a Straight Cutter Stub Boring Bar recesses an inside groove. The graduated dial stop screw can be set to hold and repeat accurate depths.



3. Back Facing. Here a Straight Cutter Stub Boring Bar back faces the piece.



4. Boring and Outside Grooving. When the boring cutter finishes the inside cut, the slide is lowered and the Straight Stub Boring Bar Cutter forms the outside groove.



5. Straddle Facing. Two Cutters simultaneously face both sides of the piece.

Defense Efforts Require Machine Tool Priorities

With the supply of machine tools a vital link in defense efforts, it is possible for one plant to be held up due to a shortage of one machine, while the same machine remains idle in another plant held up by other shortages. Here is an account of how the Priorities Commission seeks to plan production and delivery to avoid such waste

By A. N. WECKSLER
Photos Courtesy National Defense Commission

WHEN the first flotilla of German planes roared over Poland to embroil Europe in the current struggle, there was little indication that the United States would be forced into the greatest production race in history.

It was only when the war's stalemate was broken with the capitulation of France that America's role crystallized. The so-called blitzkrieg demonstrated a need for mobile guns and fast tanks, and for many more planes than had been considered necessary in previous war calculations.

Money was appropriated and contracts let. Planes, tanks and guns were purchased, but it was soon discovered that the mere signing of a contract did not assure quick delivery. Tanks are manufactured from many essential parts, and properly geared production would produce such parts in accordance with a production schedule.

The Army and Navy Munitions Board found early in its functioning that radio apparatus for installation on tanks could be delivered ahead of certain other required parts, and unless procurement was planned to a minute degree, some tank parts would be delivered for assembly before they were needed.

While the problem of warehousing such early deliveries could be met adequately, the effort which was required in rushing through an order, only to have such products in storage awaiting assembly, would be wasted.

However, soon a more important factor had to be taken into consideration. With contract awards mounting above ten billions of dollars, it became apparent that a pronounced shortage of machine tools would develop.

Production of machine tools increased sharply to meet the requirements of defense plans, but the demand for tools outstripped the production capacity of the machine tool manufacturing industry. While the production for 1937 totalled $169,683,240 in value, and $177,593,520 in 1939, production during 1940 has been variously estimated at between $400,000,000 and $435,000,000, and the requirements for the current year stagger the imagination.

Turning Cartridge Case
Mere contracts weren't enough.

One of the primary factors in the huge increases is the large imports by Great Britain and Canada of American machine tools. The value of these imports, which stood at about $5,000,000 a month, six months ago, has been increased to about four times that figure.

Normally, such export demands would be ignored in the face of our own needs for machine tools, but the expressed policy of this country binds us to direct cooperation with the British war aims, and we have affirmed our stand to extend every aid to Britain, short of troops.

With the demand for machine tools greater than the rate of supply, the Army and Navy Munitions Board devised the same expedient which was applied during the first World War—that of priorities.

Actually, the term has been much misused. It has been used to describe the control mechanism instituted over a number of commodities, but essentially the term priorities would indicate a shortage of materials, and with the exception of machine tools and a few other restricted items, no shortage has become apparent to date.

As the demand for machine tools is greater than the supply, the term priorities could be correctly applied in this field, and while, during the formative stages of the National Defense Commission, the description was loosely, and in many cases erroneously, applied, there was a system of priorities, or preferences as they were called, instituted in the machine tools field.

Orders Are Catalogued

A priorities section of the National Defense Commission was created to serve the Army and Navy Munitions Board, and all contracts let by the branches of the military service were closely studied. Each contract was given a preference rating based on the importance of the product to our defense preparation efforts and on the delivery date of the contract.

While these preferences could be ap-

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FOR TOUGH JOBS. Use Starrett S-M Molybdenum Special Alloy High Speed Steel Hacksaws for hard alloys or metals hard to cut with ordinary blades. These tough, fast-cutting, low cost blades were developed by Starrett for "trouble" jobs and are the result of special heat treating methods. Made in hand and power blade sizes.

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FOR ECONOMY. Starrett Tungsten Alloy Blades give complete satisfaction on all but the hardest jobs or where high speed cutting is essential. Low in price but in every way up to Starrett standards. Made All Hard, Flexible Back and Semi-Flexible for hand frames and for light and heavy power machines.

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STARRETT HACKSAWS

plied to the raw materials needed for the manufacture of the contracted items, the priorities essentially were for the purpose of properly tooling up the contract holders. Practically all outstanding orders for machine tools have been catalogued and recorded by the National Defense Commission.

With the restricted number of plants capable of fabricating machine tools, it was not difficult to plan distribution of their products. A machine tool section in the National Defense Commission maintained close liaison with manufacturers, tabulating stocks on hand, plant capacity, and possibilities of plant expansion.

Rough Turning Gun Tube at Watertown Arsenal
The essential procurement step is a preference rating.

The problem was to apportion the requirements of defense contract holders on a schedule to permit them to fill the contracts. A contract bearing a high degree of priority naturally was allotted immediate delivery of needed machine tools, while contractors whose products were of lesser urgency would have to wait for their deliveries.

When the first drive for defense preparation was launched, the emphasis was on the awarding of contracts. British purchasing had not assumed such a broad front, and special dispensations were required for Britain to obtain small quantities of planes, tanks, and guns. Under those early circumstances, it appeared that the machine tool industry would be able to meet America's needs within a short period of time.

There was little question of the adequacy of the industry to turn out the regular type of tools required in industry. The shortage was in tools especially adapted to the armaments industry. Six years ago, practically all gun boring lathes were standing idle, and the horizontal boring machines and the large vertical boring mills were little used.

When One Piece Halts Work

Naturally, during an era of peace there was little incentive for manufacturers to order additional tools of this nature, but with the emergency, an immediate need for these same tools developed. At the same time, manufacturers who normally produced articles of commercial nature, were being awarded armaments contracts.

Obviously, this did not mean that all tool equipment in a commercial plant had to be discarded, and new machine tools acquired. In many cases, plants had well-supplied shops, with only one particular piece of equipment lacking.

In such cases, when one piece of equipment would halt production of the entire plant, the Defense Commission machine tool section aided the manufacturer to obtain the required piece of equipment. If, as was the case in many instances, the required machine tool was on delivery to another plant where the need was not so urgent, the order was diverted to the plant with immediate need.

When such expedients could not be adopted, arrangements were made in some cases to absorb the idle time of a piece of equipment in another plant.

This latter procedure was also applied in various sections of the country where there was idle time on various machine tools in a group of plants located in close proximity. In one particular case, where a plant had a great deal of unused assembly space and surrounding plants had idle time on various types of equipment, work was farmed out, and parts were assembled utilizing the unused assembly space.

In many instances, use of idle time on machine tools was arranged among interested companies, without approach by the defense planners.

While the National Defense Commission has power to enforce its priorities, or preference ratings, in devious ways, such powers are not clearly defined, nor have they been brought directly into play. The usual procedure is to work closely with both the manufacturers of machine tools and the plants which have machine tool requirements. The essential step on the part of manufacturers who have been awarded defense contracts is to obtain a preference rating on their contract. If the rating is not of sufficient urgency to meet the contract delivery date, the manufacturer can place his case with the machine tool section of the Defense Commission or with the Army and Navy Munitions Board, and request a higher priority.

There has been no official statement as to how British orders rank in the priorities schedule. However, it has been explained that in many cases American manufacturers require machine tools for the fabrication of armaments which will be sent to Britain, or in other cases the contract is placed exclusively by the British.

In such cases, there could be no claim of urgency on the part of Britain for delivery to the British Isles, as the machine tools in question would be of as much aid in Britain's war efforts in this country as they would if they were delivered abroad.

Actually, the only foreign countries which have been receiving American machine tools are Britain, Canada, Russia and Japan. Shipments to the two last named countries have fallen sharply since the United States instituted a system of licensing for export, and as exports to Russia are said to have found their way into German hands, the trend will be toward a very limited export to the Soviets.

Exports to Britain

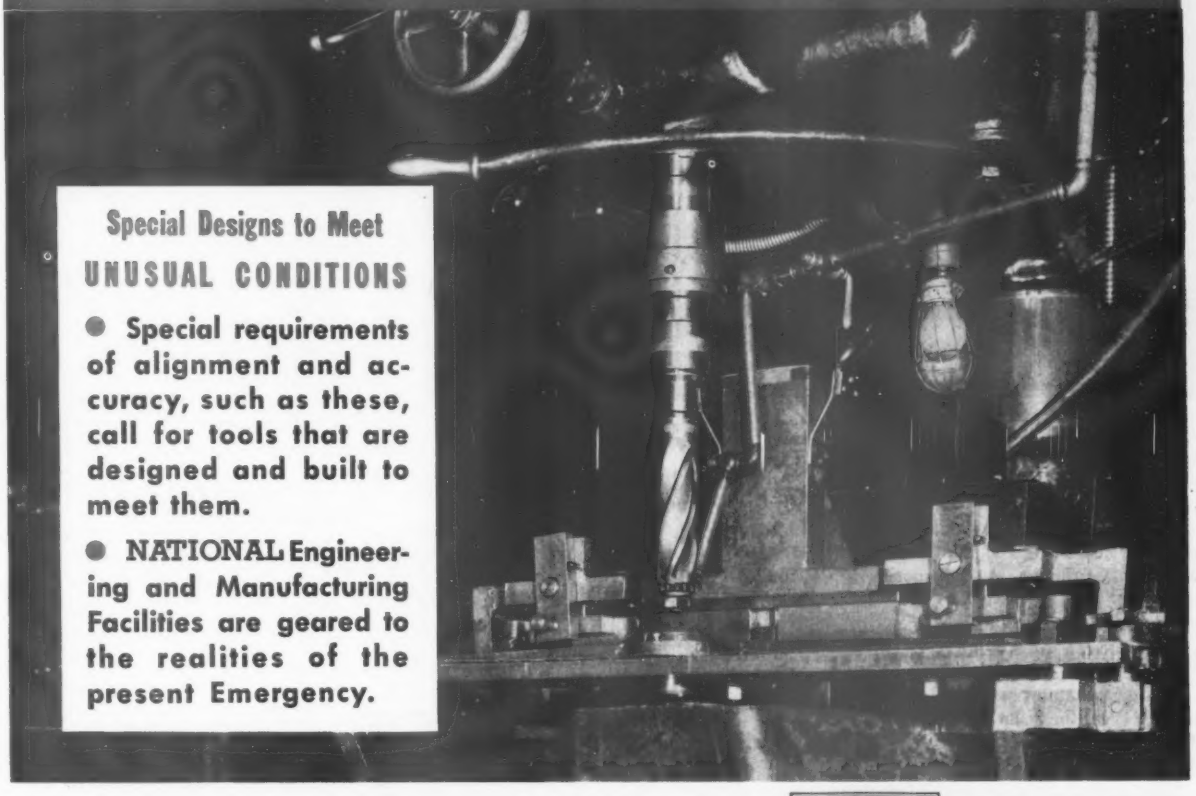
Britain, on the other hand, has been receiving machine tools of every description and in large quantities. Exports to Britain have, during a month's time, approximated as much as two-thirds of the total production for that month.

There has been no statement on the total quantity of machine tools which will be required by Britain, but statements have circulated that additional large machine tool orders will be placed by the British.

With such orders in the offing, it is explainable why there can be no correct estimate as to what percentage of machine

AT WORK IN DEFENSE OF THE NATION

NATIONAL *METAL CUTTING TOOLS*



Special Designs to Meet
UNUSUAL CONDITIONS

- Special requirements of alignment and accuracy, such as these, call for tools that are designed and built to meet them.
- NATIONAL Engineering and Manufacturing Facilities are geared to the realities of the present Emergency.

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tools are still lacking to meet our defense requirements and the British needs. It has been conservatively estimated that we are within 90 percent of our needs, and that the danger of a machine tool bottleneck is not now acute.

Under the reorganization of the National Defense Commission, with the Office for Production Management taking over the administrative function, administration of machine tool preferences will not be greatly changed. A tool and equipment section of the Division of Priorities in the Office for Production Management will delegate machine tool study to a special committee.

The Army and Navy Munitions Board will still function to determine what the schedule of priorities should be, as only the military branches are in a position to determine what their own most urgent needs are.

Straightening Press for Gun Barrel
"... such importance doubtless means increasing government control."

Knudsen's Statement

In an announcement explaining the functions of the Office for Production Management, Director William S. Knudsen stated:

"The President's purpose in creating this Office was to consolidate and coordinate the various activities now in operation to provide an adequate national defense. It is expected to provide the necessary authoritative leadership required to still further accelerate and augment the production of war materials of every kind. It is born out of a consciousness of the heightened gravity of the world situation and a recognition that the contest which produced this crisis is irreconcilable in character and cannot be terminated by any methods of appeasement. Both the future security of the United States and the total defense for our democratic principles in this worldwide contest demand that every resource of capital and management and maximum effort on the part of labor shall be ceaselessly employed to provide the means of defense against attack.

"The Office for Production Management has but one mission—production—production to the maximum of American resources in capital and labor, in management and industry, in every field which can contribute to victory.

"We call upon the people of the United States to recognize to the full the gravity of the crisis which called this organization into being, and figuratively to pull off their coats and roll up their sleeves and give their concentrated, undivided attention to one thing—the swiftest possible production of the means of defense. To this end, we invite the cooperation of every element in the American community."

In considering the consolidation moves of the National Defense Commission, it is apparent that, with the primary emphasis on production, three elements are uppermost in future defense plans—raw materials, labor and prices.

While transient shortages may develop among certain metals, there is little indication that there will be any alarming deficiency in any of the metals used in armaments production. Priorities in these fields will probably be administered as a price control mechanism rather than as a conservation measure.

Iron and steel, the bulwark of the munitions industry, present no threat as to shortage. The principal dangers in this field are contained in rising prices. The price of pig iron has remained at the same level for a number of years, and the conditions brought about by defense preparations ordinarily should not disturb the price. However, in the iron and steel industry, a large percentage of the raw material which is used is scrap iron, and the price of pig iron can be thrown into an upward spiral if the scrap iron prices fall out of line.

Price Control Efforts

Previous efforts to control the price of scrap possibly had a tendency to curb price increases, but the National Defense Commission machinery was not capable of controlling the scrap iron price.

In the administration of priorities there is such a weapon. Scrap iron is both produced and consumed by the industries which are participating in the defense preparations. In final analysis, priorities can be extended beyond control of raw materials and machine tools, and can be made to affect every element of commerce and industry.

Just as during the World War, when priorities were extended to freight transportation and even to financing, similar powers are inherent in the present Defense Commission in theory, if not in practice. Defense planners are reluctant to invoke disciplinary measures until all other means of getting cooperation have failed.

Under the Office for Production Management plan, a Minerals and Metals Priority Section will function to insure, first of all, an adequate flow of raw materials to plants engaged in defense work. An iron and steel priorities committee will operate under this minerals and metals section, whose function it will be both to maintain the flow of iron and steel to industry and to concern itself with the prices of iron and steel. While it is impossible to predict which of many possible steps will be taken to control iron and steel prices, it is clear that such control is vital to defense.

Substitute materials may be used in some types of manufactured articles, but control of prices, in the viewpoint of defense planners, is the first concern in this field.

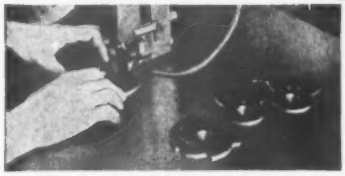
As far as high speed steels are concerned, there is little likelihood of a shortage, since the tonnage requirements are small. While it is true that the ingredient materials in some steels are imported, reserves of these materials are being accumulated, and shortages are not feared. Special alloy steels are similarly viewed.

In review, the machine tool industry today is uppermost among the vital industries contributing to national defense. Upon this industry depends the scope of our defense, and while such importance doubtless means continued and increasing government control, all steps in this direction have been of a cooperative nature rather than an enforcement of laws or regulations.

HARD JOBS MADE EASY

ON THE DoAll

C. A. Weidner & Sons, Rochester, N. Y. are now able to do highly specialized metal cutting jobs that would be difficult, tedious and prohibitive in cost without their DoAll Machines.



Screw Machine Cams, averaging 3/8" thick and 8" diam. cut on a DoAll at Remington Rand, Inc., Elmira, N. Y.

Locking Cam and Cam Stop made of oil hardening tool steel cut directly on the DoAll (no die required) by Taylor Instrument Co., Rochester, N. Y.

★ SPEED UP DEFENSE WORK ★

Time—that's what we're all working against, not only in our defense program, but in regular industrial production. Wherever metal is shaped, cut and used, the DoAll Contour Machine can effect surprisingly large savings in time, labor and material. It's today's indispensable tool.

NEW MODEL V-60

A brand new model with three 26" wheels, the third one to give it a throat 60" deep. Handles large size and odd shaped metal parts and products.

Four of these are in use at the Canadian General Electric Co.

Investigate the DoAll immediately. Let us send a factory trained man to your plant to show you what a DoAll can do for you.

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A super precision surface grinder—a real production tool. Less vibration because motor is built right on ball-bearing spindle. Work table travel is infinitely variable, up to 50 f.p.m., and has exceptionally large bearing surface.

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SPEEDMASTER

This compact unit produces instant variable speed—6 to 1 ratio—and is a part of every DoAll.

It is also available for installation in other machines requiring variable speed. Operates with standard "V" belts, at any angle. Three sizes.

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Does internal and external filing on all metals. Action is continuous, which means faster, better results. 21 file bands available, 1/2", 3/8" and 1/4" wide—flat, oval or half round.

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The most complicated patterns you have are no problem to the DeWalt. It makes every cut desired with the accuracy expected.

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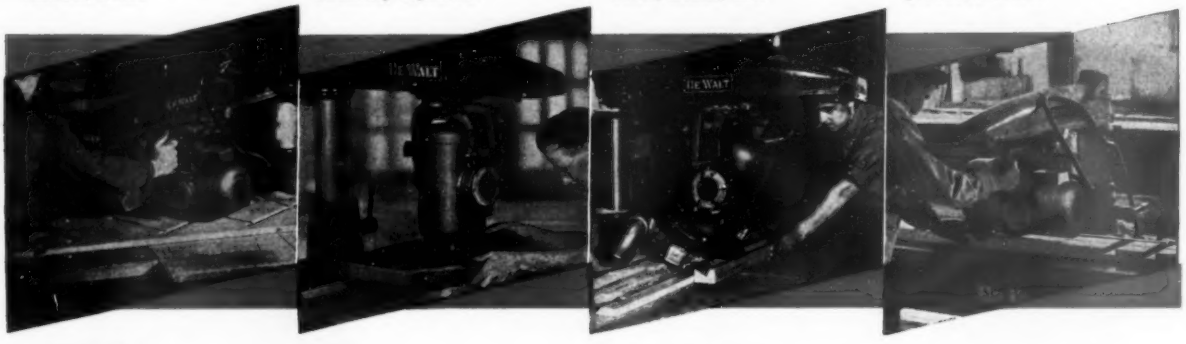
DeWalt is engineered and built to handle peak volumes on any operation. It's a dependable machine on any production line.



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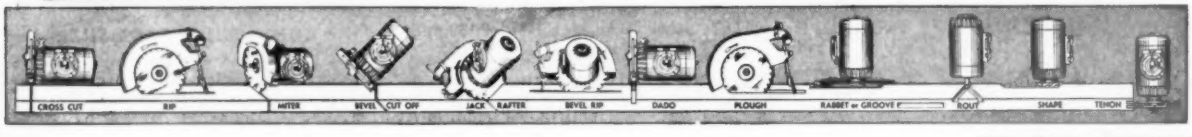


Production Perspectives

News of Mass Manufacturing Everywhere

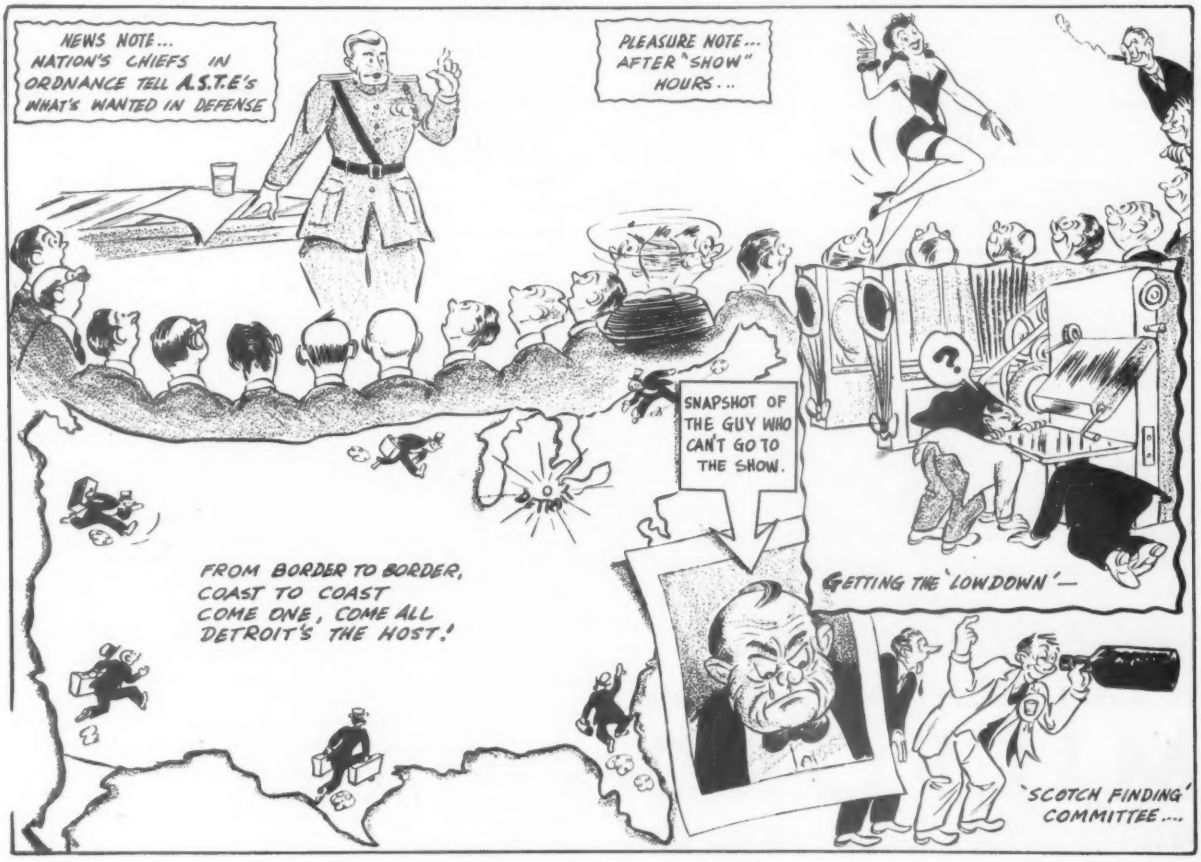
"VAST amounts of idle plant space" and only partly used equipment were disclosed in early returns from a nation-wide survey of industrial capacity, the National Association of Manufacturers announced last month. The National Industrial Council, sponsored by the association, undertook the factory inventory to provide the government with information of facilities available for defense production. Early reports from manufacturing organizations in Virginia, Kentucky, Maine, and a dozen other states, east of the Mississippi "show a preponderance of manufacturers who do not have defense contracts at present but whose facilities can and will be converted to defense production if desired," said Walter D. Fuller, president of the association. Analysis of the first 100 returns from Virginia, he reported, revealed only 21 at work on defense orders while 40 noted they could expand production.

The Supreme Court refused to review a National Labor Relations Board order against the Ford Motor Co. The court in effect thus upheld a decree holding that the automobile manufacturer coerced and intimidated employees at two plants. Under the order, Ford is required to cease discouraging membership in the C.I.O. Automobile Workers' or any other union; to discontinue "threatening, assaulting, beating" or interfering in any other way with employees' organizing rights; and to reinstate with back pay 23 men whom the board found were discharged for union activity. The case, the first of several board proceedings involving Ford to reach the high court, concerned circumstances in 1937 at the company's River Rouge and Highland Park, Mich., plants.

An all time high for steel production was reached in January when production of 6,943,084 net tons of open hearth, Bessemer, electric steel ingots and castings was announced by the American Iron and Steel Institute. In October, 1940, previous peak month, production totaled 6,643,975 tons. January output represented a gain of 7 per cent over 6,493,849 in December and 20 per cent compared with 5,768,729 tons in January, 1940. January's production was at the rate of 97.1 per cent against 94.1 per cent in December and 83.4 per cent a year ago. This report was first monthly statement to include steel produced in electric furnaces as well as steel for castings produced by any process. Figures since January, 1927, have been revised to correspond with current reports.

FACILITIES for producing aircraft engine parts which have been installed at the West Springfield plant of the Perkins Machine & Gear Company during the last three months are

E X H I B I T I O N S I D E L I G H T S


NEWS NOTE... NATION'S CHIEFS IN ORDNANCE TELL A.S.T.E.'S WHAT'S WANTED IN DEFENSE
PLEASURE NOTE... AFTER "SHOW" HOURS...
SNAPSHOT OF THE GUY WHO CAN'T GO TO THE SHOW.
FROM BORDER TO BORDER, COAST TO COAST COME ONE, COME ALL DETROIT'S THE HOST!
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A machine for contour-sawing is no better than its saw. Milford Profile Saw is the fastest-cutting, most durable saw made — by the world's largest, most experienced manufacturer of metal-cutting band saw.

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MILFORD

REZISTOR HACKSAW BLADES — PROFILE SAW

valued at $273,750 with more to follow until a total of $365,000 has been reached, Dr. Edwin C. Gilbert, general manager says. The company is making parts for the United Aircraft Corporation at East Hartford, Conn.

Work is in progress for a new building for the Worthington Pump & Machinery Corporation, Holyoke, Mass. to cost $60,000.

Work will start soon on the erection of a new factory building for the American Steel & Wire Co., Worcester, to cost $200,000.

Plans are in progress for an addition to the factory, the Production Machine Co., Greenfield.

Plans are in progress for the erection of a new factory building for the C. H. Cowdrey Machine Works, Fitchburg.

The West Springfield shops of the Boston & Albany Railroad are experiencing one of the busiest periods in its history, with the best schedules of locomotive repair work in operation at the present time in three to four years. More than 400 men are employed in the shops, servicing and repairing locomotives with the work expected to last for some time.

Chapman Valve Manufacturing Company, Springfield, Mass. did $1,000,000 more business last year than in 1939. Expectations are that the 1940 figure will be topped by $9,000,000 in 1941.

TUNGSTEN Electric Corporation has announced a radically reduced schedule of prices on Teco Carbide cutting tools and blanks; reductions range up to sixty per cent. Sheffield Gage is erecting a new Air-Conditioned Gage Manufacturing plant of the war-time, black-out variety. Containing about 32,000 square feet of additional floor space, it will more than double present capacity and will cost approximately a million dollars.

Now engaged in an expansion program which will triple their metal production capacity, the Carboloy Company is now supplying, and has been for some time, powdered tungsten carbide to Great Britain as well as equipment for manufacturing the metal. W. G. Robbins, President of the Company, spiked as ridiculous, reports that any shortage of the metal for National Defense purposes existed, or would be permitted to arise.

Reed-Prentice Corporation announces a plant expansion totaling $400,000 which will double their capacity for production of engine and toolroom lathes. Ampco Metal, Inc., Milwaukee, manufacturers of aluminum bronze alloys, have signed a contract for a new foundry addition which will contain over 75,000 square feet of working space.

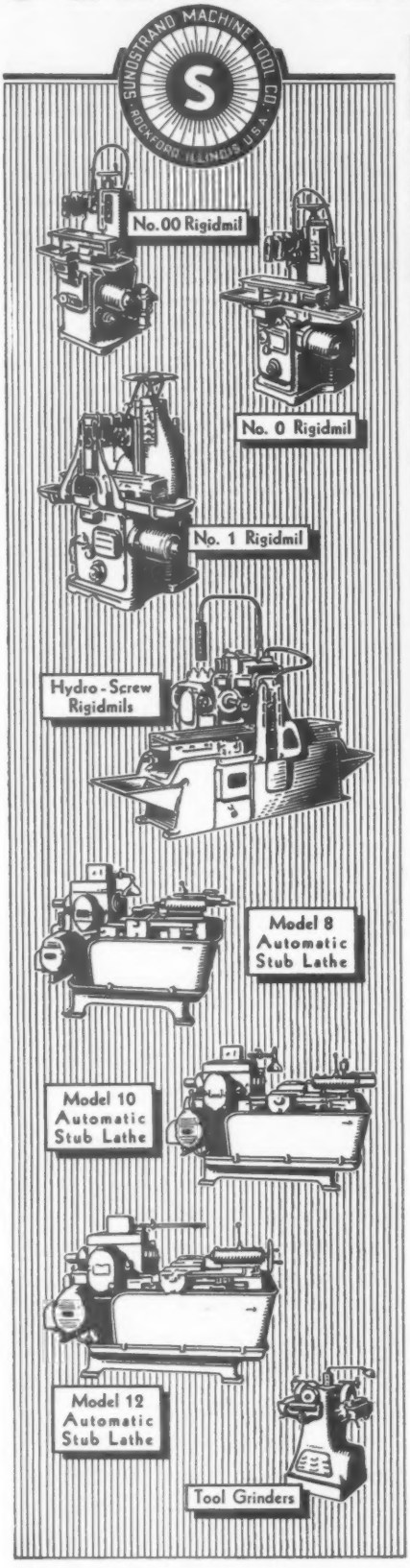
Plant expansions, coupled with the adoption of improved methods and the operation of many departments 24 hours a day, have been undertaken by Vascoloy-Ramet Corporation to meet National Defense requirements. In order to facilitate delivery, direct factory owned branches are being established in Detroit, Cleveland, Cincinnati, Pittsburgh, Providence, Hartford, Jersey City, Philadelphia, and Milwaukee.

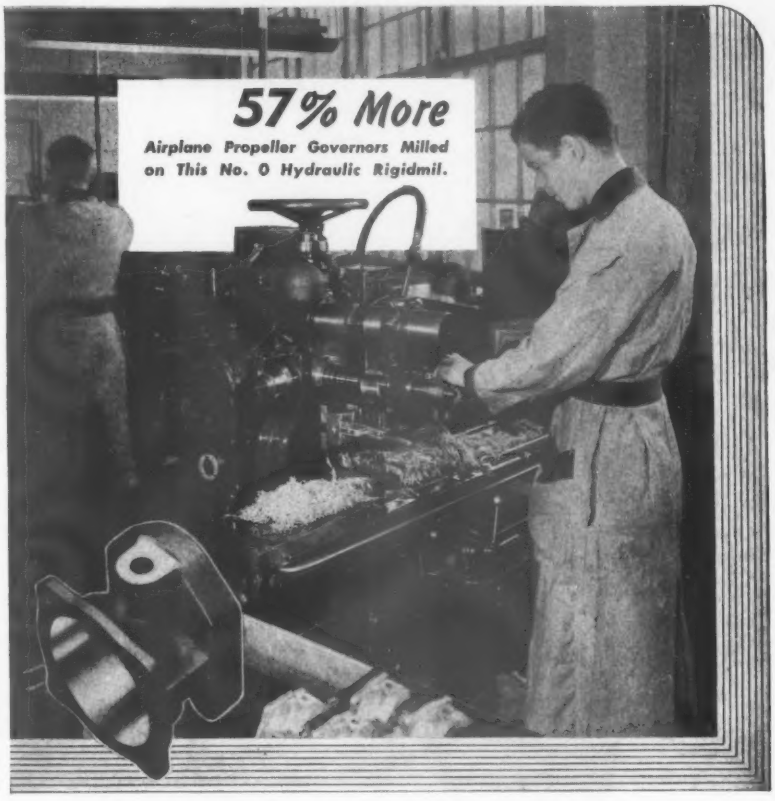
R. G. Haskins Company, manufacturers of Air Controlled Tapping Machines and Flexible Shaft Equipment, are building an addition to their factory in Chicago. The new unit will provide approximately 8000 square feet of additional manufacturing space.

Allegheny Ludlum Steel Corporation is increasing its capacity for melting special steels by approximately 4,000 tons per month. Announcement of the expansion was made recently by W. F. Detwiler. The increase will be made possible by contracts just placed for the installation of two additional electric melting furnaces at the Brackenridge plant.

One of the first industrial buildings to be completed in accordance with defense recommendations of the FBI has just been built by the Pioneer Engineering and Manufacturing Co., Detroit. Complete protection against saboteurs has been provided as well as adequate provisions for blackouts. The walls are of solid construction except for small ports of unbreakable glass.

Sundstrand *Works* For Peace





★ When airplanes, tanks, big guns, small arms, and other defense equipment mean peace . . . then Sundstrand works for peace in a big way. ★ For example, the two-way automatic hydraulic cycle, and other features of the No. 0 Rigidmil shown above contribute to a 57% increase in production on milling bodies for airplane propeller governors. Same Rigidmil also handles 14 other jobs effectively. ★ Other Rigidmils in many other plants mill parts galore for 'planes and engines. ★ Stub Lathes, too, work for peace through adequate defense by turning airplane engine cylinders and pistons, bushings, shells and countless other turning, boring, forming, facing jobs. ★ Principal Sundstrand machine tools are sketched at left. Investigate their extra-productive capacities, adaptability and value. While working on advance-dated deliveries now, we are always at your service for engineering new production. Write, *today*, for complete information.

Every member of our organization gladly makes this vow:
"I pledge allegiance to the Flag of the United States of America and to the Republic for which it stands, one Nation indivisible, with liberty and justice for all."

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Here is a booklet packed with practical, understandable, usable information that has helped overcome many of the common difficulties frequently encountered in the operation of hack saw blades and band saws—difficulties that often result from mistaken ideas that are here discussed in detail. It's a booklet loaded with facts, charts, pictures—the result of the combined experience of an organization of specialists which for years has been devoted to the manufacture and sale, through distributors, of Barnes Better Hack Saw Blades and Band Saws.

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TUESDAY, MARCH 25 — 8:00 P.M. — CONVENTION HALL

AIRCRAFT NIGHT

AIRCRAFT PRODUCTION

***Chairman*—Walter F. Wagner, Master Mechanic Lincoln Motor Car Co.**

Speaker—C. W. Van Ranst—Chief Aircraft Engineer, Ford Motor Co.

Subject—Aircraft Engine Design & Production

Speaker—Louis Biehler, Ass't Chief Tool Designer, Vultee Aircraft, Inc.

Subject—Tooling for Fuselage Production (This paper will be jointly prepared by the Lockheed and Vultee Organizations).

C. C. Carlton, Acting Director, Automotive Committee for Air Defense will have charge of discussion from the floor.

▼ ▼ ▼

WEDNESDAY, MARCH 26 — 8:00 P.M. — CONVENTION HALL

NAVY NIGHT

NAVAL ORDNANCE PRODUCTION

***Chairman*—Homer C. Bayliss, Co-Manager Detroit Branch, Motch & Merryweather Machinery Co.**

Speaker—Joseph A. Davies, Chief Planner & Estimator, Naval Gun Factory, Washington, D. C.

Subject—Planning for Production of Naval Ordnance Units

Speaker—E. M. Sims, President, Metal Forming Corp., Elkhart, Ind. Member Board of Directors, National Association of Manufacturers, Member National Defense Committee

Subject—Problems of Production of Naval Ordnance Units

▼ ▼ ▼

THURSDAY, MARCH 27 — 8:00 P.M. — CONVENTION HALL

EDUCATION NIGHT

***Chairman*—Herbert D. Hall, President, Herbert Hall Co., Newark, N. J.**

Speaker—P. W. Brown, Ass't Works Manager Wright Aeronautical Corp., Paterson, New Jersey

(Continued on following page)

Subject—Industry's Need in Skilled Help

Speaker—Carl A. Gray, President, The Grenby Mfg. Co., New Britain, Connecticut

Subject—How Connecticut Solved the Industrial Training Problem

Speaker—J. R. Weaver, Manager, Louisville Ordnance Division, and Past President A.S.T.E., will describe the work A.S.T.E. is doing for industrial training and will lead discussion from the floor

▼ ▼ ▼

FRIDAY, MARCH 28 — 6:30 P.M. — BOOK CADILLAC HOTEL

A.S.T.E. ANNUAL DINNER AND MEETING

DINNER . . . . . **6:30 P.M.**

MEETING . . . . . **8:00 P.M.**

***Chairman*—A. H. d'Arcambal, President A.S.T.E., Metallurgist—Pratt and Whitney Div., N.B.P., Co.**

Installation of new National Officers—Society Reports

Speaker—L. R. Pennington, Administrative Ass't to J. Edgar Hoover, Director Federal Bureau of Investigation

Subject—The F.B.I. and National Defense

PLANT TOURS

Plant inspection tours through the plants in the Detroit Metropolitan area, listed below, may be arranged for by application at the Cass Avenue Entrance to the Exhibition Hall. Plant tours not listed may also be arranged for in many instances—ask at Entrance desk.

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CHRYSLER MOTOR CO. (Jeff. Plant)

CHRYSLER ENGR. (H. P. Plant)

DESOTO MOTOR CO.

DODGE MOTOR CO.

DODGE TRUCK CO.

PLYMOUTH MOTOR CO.

CADILLAC MOTOR CO.

CHEVROLET GEAR & AXLE

HUDSON MOTOR CO.

PACKARD MOTOR CO.

GREENFIELD VILLAGE

NASH KELVINATOR

THOMPSON PRODUCTS

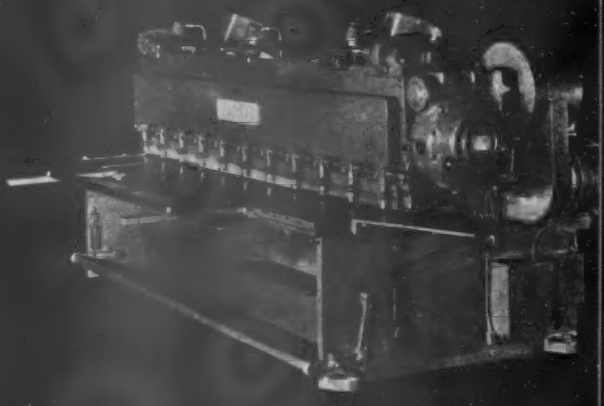
LONG MANUFACTURING

Cincinnati
Power Rapid Traverse
SHAPERS

Cincinnati Shapers are built in plain or universal table types from 16" to 36". Their power rapid traverse, multiple cam feeds, automatic oiling, simplified adjustments, and means for quick, easy set-up sell the man who buys for results in the tool room and die shop. Write for Catalog N-1.

Cincinnati
All-Steel
SHEARS

A machine tool for shearing, squaring, notching or slitting metal. Sizes for every requirement from 0.005" aircraft alumium alloy to 1¼" steel plate. All steel construction, hydraulic hold-downs, micrometer ball bearing back gauge, and positive knife adjustment give speed and accuracy. Write for recommendations on your job.



Cincinnati
All-Steel
PRESS BRAKES

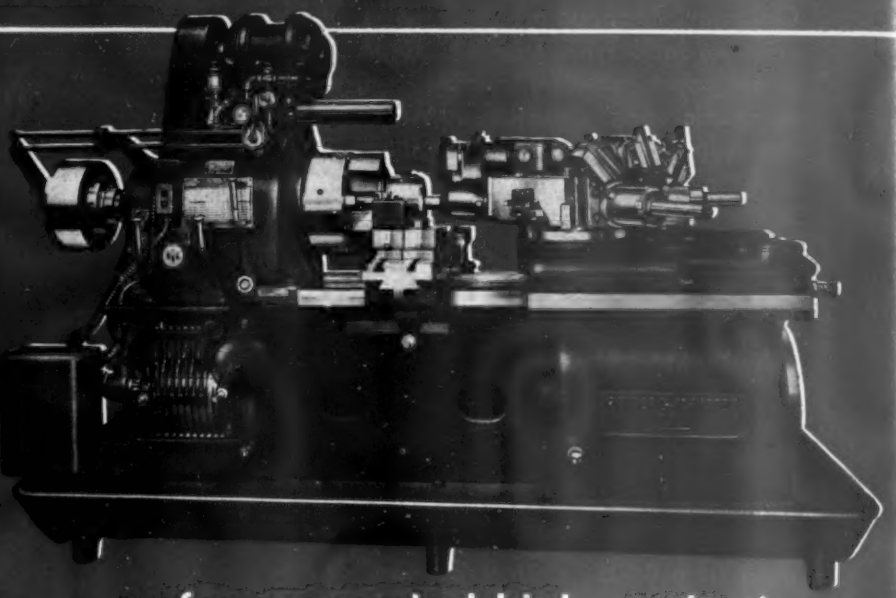
These are the modern machines for bending, corrugating, flanging, forming or multiple punching sheet metal and steel plate. Built in a machine tool plant to machine tool standards. Sizes from 75 to 1,000 tons or more for working material from light aluminum alloys to heavy armor plate. All-steel construction, deep bed and ram plates keep the dies parallel under full load . . . consistently produce uniform parts that fit together easily. Write for recommendations on your job.

THE CINCINNATI SHAPER CO.

SHAPERS · SHEARS · BRAKES

CINCINNATI, OHIO.

5-D POWER-FLEX



. . . for economical high production of accurate parts . . .

Nearly forty years experience is behind this flexible, highly productive automatic chucking and turning machine. For any work within its range the 5-D POWER-FLEX assures an output per spindle greatly in excess of the best previous practice.

Many modern developments make it possible to attain highly economical production of duplicate parts and at the same time maintain highest standards of accuracy. Four automatic changes of spindle speed under cut, powerful direct cross slide action, three selective automatic feed changes are among the many outstanding features which contribute to maximum production.

Investigate this machine and its possibilities thoroughly by sending for Bulletin No. 108 and consulting P & J Engineers on your problem.

OTTER & JOHNSTON MACHINE COMPANY. PAWTUCKET. R. I.

EXHIBITORS

1941 Machine and Tool Progress Exhibition

CONVENTION HALL

DETROIT, MICHIGAN, MARCH 25-29, 1941

Abrasive Company, Philadelphia, Pa. (113) Grinding Wheels and Abrasives

Allen Manufacturing Company, Hartford, Conn. (220) Socket Screws

Allis-Chalmers Mfg. Co., Milwaukee, Wisconsin (145) Electric Motors from one to 200 H.P., Texrope V-Belt Drives, Machine Tool Coolant Pumps. Five to 75 ampere and five to 40 ampere (391) "Weld-O-Trons"

American Broach Sales Co., Detroit, Mich. (247) Display of tools with a miniature machine.

American Machinist, New York, New York (176) Copies of "American Machinist"

Ames Company, B. C., Waltham, Mass. (367) AMES Gauges and Dial Indicators.

Ampco Metal, Inc., Milwaukee, Wisconsin (357) Nonferrous Alloys

Anderson & Sons, Westfield, Mass. (201) Imprinting Machines. Etched and Lithographed Metal Products.

Apex Machine & Tool Co., The, Dayton, Ohio (172) Quick Change Drill Chucks and Collets, Safety Friction Tap Chucks and Collets, Stud Setters, Universal Joint Nut Setters, Plain Nut Setters, Universal Sockets, Tension Wrenches, Universal Joints, Aircraft Universal Joints, Screw Driver Bits for Phillips, Slotted and Clutch Head Screws

Armstrong Bros. Tool Company, Chicago, Illinois (274) Machine Shop Tools

Atlas Press Company, Kalamazoo, Michigan (360) Atlas Lathes, Drill Presses, Arbor Presses, Shaper, Milling Machine and Saws

Automotive Industries, Philadelphia, Pa. (226) Automotive Publications

Barber-Colman Company, Rockford, Illinois (100) Small Tools

Barnes Co., Inc., W. O., Detroit, Michigan (135) Barnes Hack Saw Blades and Metal Cutting Band Saws

Black Drill Co., The, Cleveland, Ohio (351) Newly developed drills for drilling steels and other metals, Rockwell 45 upwards to 70

Blake Company, Edward, New Centre, Mass. (257) Black Diamond Precision Drill Grinder, J-B Tap Grinders, American Tool Holders

Blank & Buxton Machinery Company, Jackson, Michigan (159) Index High Speed Vertical Milling Machines

Boggis & Company, Henry P., Cleveland, Ohio (216) HYBCO Tap Sharpening Equipment

Boice-Crane Company, Toledo, Ohio (355-A) Boice-Crane Drill Presses & Tapping Machines, Boice-Crane Wood & Metal Cutting Band Saws, Boice-Crane Power Tools

Boyar-Schultz Corporation, Chicago, Illinois (119) Boyar-Schultz Profile Grinders, Copper Head Lamps, Screw Machine Box Tools, and Special Machine Bolts

Bridgeport Machines, Inc., Bridgeport, Conn. (353) Bridgeport Turret Milling Machines, High Speed Milling Attachments, Duplicating Attachments

Bristol Company, The, Waterbury, Connecticut (397) Complete line of Socket Screw Products, including Set Screws, Cap Screws, Wrenches, Stripper Bolts and specialty screw products

Brown & Sharpe Mfg. Co., Providence, R. I. (104) Machinists' Tools, Cutters, Pumps, Magnetic Chucks

Bruning Company, Inc., Charles, Detroit, Michigan (132) No. 159 Printing and Developing Machine, No. 154 Developing Machine, No. 55 Printing Machine

Brush Development Co., Cleveland, Ohio (388) Brush surface analyzer and generalizer

Campbell, Andrew C., Div. American Chain & Cable Co., Bridgeport, Conn. (205) "Cutomatic" Wet Abrasive Cut-Off Machine & No. 250 Nibbling Machine

Carboloy Company, Inc., Detroit, Michigan (124) Carboloy cemented carbide tools, dies and dressers

Carborundum Company, The, Niagara Falls, N. Y. (203) Tool Room Wheels, Carborundum Brand Diamond Wheels and "Green-Grit" Wheels, Mounted Wheels, Ultra Finish Wheels and Superfinish Stones, Carborundum and Aloxite Brand Cutting off Wheels, Cylinder Hones and Sticks, Aloxite Brand Cloth

Carpenter Steel Co., The, Reading, Pa. (363) Tool Steel—properties and applications

Charron Engineering Sales, Detroit, Michigan (234) Hanna Pneumatic Riveters, Hanna Hydraulic Riveters, Hanna Pneumatic Cylinders, Hanna Hydraulic Cylinders, Hanna Air Valves Cylinders, Electro Lift Monorail Hoists, Electro Lift and Trolleys, Electro Lift Base Mount Hoists, Electro Lift Door Lift Hoists.

Chicago Mfg. & Distributing Co., Chicago, Illinois (332) CMD Helical Groove Lathe Center, CMD Lathe center point lubricant welders' combination chipping hammer, centrifugal action mechanical air separator, CMD blow valves.

Chicago Metal Hose Corporation, Maywood, Illinois (249) Flexible Metal Hose and Bellows

Chicago Rivet & Machine Co., Chicago, Illinois (114) Tubular Rivets, Split Rivets, Automatic Feed Rivet Setting Machines

Cincinnati Tool Co., The, Cincinnati, Ohio (322) Mechanics Hand Tools, Motor Driven Chisel Tester, Electric Display Table

Circular Tool Company, Providence, Rhode Island (163) Circular Metal Cutting Saws, Combination Center Drills, Center Reamers

Consolidated Machine Tool Corp., Rochester, New York (348) Self-Opening Die Heads, Milling Cutters, Modern-Magic Chucks, Stud Setters, Collapsible Taps

Conover-Mast Corporation, New York, N. Y. (275) Copies of "Mill & Factory"

Continental Machines, Inc., Minneapolis, Minn. (358) DOALL Model V-26, DOALL Model V-36, DOALL Model ML, DOALL Surface Grinder, DOALL Precision Saw Blades, Speedmaster Variable Speed Pulley

Crafts Co., Inc., Arthur A., Boston, Mass. (261) Industrial Diamonds and Industrial Diamond Tools, Tungsten Carbide Blanks and Tools, Gages

Curtis Industrial Designing Engineers, Detroit, Michigan (369) The metals: Cerrobend, Cerrobase and Cerromatrix. Cerrobend Spotting Fixtures and Trim Racks for Dies. Cerrobend and Zinc Surfaced Low Production Dies for Airplane Stampings. Cerrobend Duplicate Models. Cerromatrix Punch Retainers for Piercing Dies. Cerrobend Type Checking Fixtures

Davis Boring Tool Div. Larkin Packer Co., Inc., St. Louis, Mo. (263) Davis Boring Tools, Davis Facing Tools, Davis Reamers.

Delta Mfg. Co., Milwaukee, Wisconsin (139) Single & Multiple Spindle Drill Presses, Carbide Tool Grinders, Pedestal Grinders, Cut-off Machines, Metal Cutting Band Saws, Abrasive Finishing Machines, Accessories

Detroit Power Screwdriver Company, Detroit, Michigan (155) Magazine Feed Power Screwdrivers

Detroit Time Study Training School, Inc., Detroit, Mich. (323) Folders and advertising literature; demonstrations on Elliott-Fisher Machine.

Detroit Universal Duplicator Co., Detroit, Michigan (403) Detroit Universal Duplicator, Duplicator-Lathe combination, operating on sample parts, having feeds controlled solely by electro-hydraulic means

DeWalt Products Co., Lancaster, Pa. (355-B) Cutting equipment for metal and wood

Dietzgen Co., Eugene, Chicago, Illinois (237) Drafting, Surveying and Reproduction Equipment

Dumore Company, The, Racine, Wisconsin (143) Precision Tool-Post Grinders, Thread Grinder (Portable), Off-Hand Grinders

Duro Metal Products Company, Chicago, Illinois (120) Rip Saws, Jointers, Band Saws (wood or metal) Wood Lathes, Scroll Saw, Sander, Router, Four Spindle & Single Spindle Drill Presses, Screw Cutting Lathes

Engineering Sales Company, Sheboygan, Wis. (309) Esco Drafting Tables, Esco Bakelite Straightedges, T-Squares, Parallel Ruling Attachments, Stools, Chairs, Benches, Drafting.

Esco Engineering Corp., Detroit, Michigan (224) Esco Drill Jigs

Experimental Tool and Die Company, Detroit, Mich. (335) Universal Slotting Head, attached to a Bridgeport Vertical Milling Machine.

Farmer Co., Ray H., Detroit, Mich. (405) Tool & Cutter Grinder, Tungsten carbide grinder, chip breaker grinder, welding machine, Drill chucks, expanding mandrels, Misc. saw filing machines, automatic cutter punch presses, automatic saw grinding machines, automatic saw filing machines, automatic cutter grinders, all types bending fixtures, small metal brake and metal shear die filing machine

Fauver Co., Inc., J. N., Detroit, Michigan (169) Fauver Hose Assemblies

Federal Products Corporation, Providence, R. I. (267) Precision Measuring Instruments.

Firth-Sterling Steel Company, McKeesport, Pa. (235) Firthite Sintered Carbide Tools and Wear Resistant Parts, Firthaloy Wire Drawing Dies and Wire Forming Tools, High Speed Steels, High Production Die and Tool Steels, High Speed Steel and Tool Steel Drill Rods

Ford Motor Company, Dearborn, Michigan (276) Johansson Gage Blocks and Accessories with an automatic balopticon machine to show slides of various uses of these gaging tools

Gairing Tool Company, The, Detroit, Michigan (126) Our full line of standard and special tools

General Electric Company, Schenectady, New York (107) Motors and control will be included

George Machinery Company, James W., Detroit, Michigan (412) Wells Band Saws, Walker-Turner Band Saws-Radials, Drills, etc. Reid Surface Grinders, Majestic Internal Grinders, Marshalltown Punch Press, Queen City Grinders & Buffers, Sheldon Lathes, Sibley Drill Presses and Agnew Welders

Goodspeed-Detroit Company, Detroit, Michigan (380) Gammons Reamers and End Mills, Nielsen Live Centers, Glenny Adjustable Expansion Broaches, Severson Taper Geared Pump, Ideal Speed Lathes, Abrasive Cut-off Machine, Model R Power Reaming Machine, Annis Welder (Spot Welding) Annis Demagnetizers

Gorham Tool Company, Detroit, Michigan (128) Group of defense items, Tools made from Forged High Speed Steels, Gorham Cast High Speed Steel and Gormet

Graf Company, V. L., Detroit, Michigan (118) Grafco steel fittings, titeflex metal hose, Steel tubing, Schrader gauges, high pressure and low pressure hose with couplings, tube fabricating

BOOTH NUMBERS (IN PARENTHESES) REFER TO FLOOR PLAN ON PAGE 65

PLAN TO MEET YOUR FRIENDS AT 136—THE HOST BOOTH

Grob Brothers, Grafton, Wisconsin (150) Die making machines continuous filing machines, metal band sawing machines, operating end band saws.

H & H Research Co., Detroit, Michigan (379) Multi-Purpose Tools series A to F and accessories for use with same

Hamilton Mfg. Company, Two Rivers, Wisconsin (141) Drafting Room Equipment, Drawing Tables, Files for Tracings and Blue Prints

Hamilton Standard Propellers, East Hartford, Conn. (245) Cutaway Model of Pratt & Whitney Airplane Motor and display of Propeller and Propeller parts

Hammond Machinery Builders, Kalamazoo, Michigan (154) Grinders and Polishers

Hannifin Manufacturing Co., Chicago, Illinois (243) Ten ton hydraulic straightening press, air cylinders, hydraulic cylinders, air control valves and chucks.

Hardinge Brothers, Inc., Elmira, New York (127) Index Fixtures. Sjogren Speed Collet Chucks, Hardinge Collets for Lathes and Milling Machines, Morrison collets, Feed Fingers, Pads, Form and Cut-Off Tools for Automatic and Chucking Machines and Turret Lathes.

Hartford Special Machinery Co., The, Hartford, Conn. (311) The Hartford Super-Spacer, The Hartford Quick Acting Milling Machine Vise. Thread, gear and cam grinding

Heim Company, The, Fairfield, Connecticut (214) Heim Die Polishing Machines, Heim Self-Contained Roller Bearings, Heim Dowel Pins, Heim Caster Wheel and Lapping Machine

Heller Brothers Company, Newark, N. J. (399) Selection of various types of files, pictures showing manufacturing and processing of files and their use in the National Defense Program, Displays of Hammers and heavy Masterenches

Hitchcock Publishing Company, Chicago, Illinois (272) Copies of various publications

Holo-Krome Screw Corporation, The, Hartford, Connecticut (156) Socket Screw Products

Houghton Company, E. F., Philadelphia, Pa. (116) Cutting oil, lubricant, leather belting, rust preventives

Hunt & Sons, C. B., Salem, Ohio (134) "Quick-as-Wink" Air valves, hydraulic valves and hose couplings

Huot Manufacturing Co., St. Paul, Minnesota (219) Drill Indexes—six sizes

Illinois Tool Works, Chicago, Illinois (270) Electrical Recording System, Metal Cutting Tools, Measuring Machines

Independent Pneumatic Tool Co., Chicago, Illinois (273) Portable electric tools

Industrial Equipment Co., Detroit, Michigan (347) "Industrial" High Pressure Hydraulic Oil Hose, Hose Assemblies and Hose Stems

Industrial Press, The, New York City (111) Copies of MACHINERY Magazine and Engineering Books

International Nickel Company, Inc., The, New York City (374) Specimens Nickel Alloy Steels, Nickel Cast Irons, Nickel Bronzes, Monel, Alnico, etc.

Iron Age, The, New York City (105) Copies of The Iron Age and publication data.

Janette Manufacturing Co., Chicago, Illinois (378) Motorized Speed Reducers, Motorless Speed Reducers, Rotary Converters, Generators, Motor Generators.

Jarvis Company, The Charles L., Middletown, Connecticut (144) Flexible Shaft Machines, Flexible Shafts, Flexible Shaft Tools and handpieces, Rotary Files, Topping Devices, Quick Change Chucks and Collets, Niedhammer Screw Drivers and Nut Setters.

Johnson Gas Appliance Co., Cedar Rapids, Iowa (321) Hi-Speed Heat Treating Furnaces (Bench & pedestal models-gas fired), Pot Hardening Furnaces (gas fired), Industrial gas appliances, Pre-Heating Torch, Slotted Type Industrial Burner, Bench type Soldering and Carbon Steel Heat Treating Furnaces.

Jones & Lamson Machine Company, Springfield, Vermont (137) Full line of J & L Comparators and Measuring Machines including several new models.

Jones-Fors Company, Detroit, Mich. (171) Hole checker, Universal jigs, key way cutters, rivet sets and anvils.

Joyce-Grindland Co., The, Dayton, Ohio (376) Joyce "Moteralifts", Joyce Industrial Jacks.

Keuffel & Esser Company, Hoboken, N. J. (207) Drafting Machines, Drawing Instruments, Drafting Room Furniture, Lettering Devices, Wyteface Tapes, Slide Rules and New Reproduction Materials.

Koebel Diamond Tool Co., Detroit, Michigan (148) Diamonds, Diamond dressing & boring tools, Diamond core drills.

LeMaire Tool & Mfg. Co., Dearborn, Michigan (365) LeMaire Standard No. 10 Drill Press, LeMaire Standard No. 5 Drill Press, LeMaire Horizontal Notching Machine.

Link Engineering & Mfg. Co., Detroit, Michigan (117) Spring checkers, Piston ring wall pressure testers, and Rubber compression testers.

Lipe, Inc., W. C., Syracuse, New York. (158) Lipe Pneumatic Bar Feed (Auxiliary Feed Mechanism for Screw Machines.)

Lufkin Rule Company, The, Saginaw, Michigan (227) Measuring Tapes, Rules and Precision Tools.

Lyon Metal Products, Inc., Aurora, Illinois (359) Specialized storage equipment for toolrooms providing visible, quickly accessible storage for everything carried in a toolroom.

McCaskey Register Co., The, Alliance, Ohio (266) Tool control systems, Inventory control system, Perpetual inventory and production records and Cost systems.

McKenna Metals Co., Latrobe, Pennsylvania (345) Kennametal Tools & Blanks, Kennametal Lathe Centers.

M — B Products, Detroit, Michigan (121) Portable Pneumatic Grinders, Air Line Filters, Automatic Air Line Lubricators, Combined Automatic Air Line Filters and Lubricators.

Machinery Manufacturing Co., Los Angeles, Calif. (356) One Vernon 11" Shaper, Two Vernon No. 0 Horizontal Milling Machines, Two Vernon Combination Vertical Milling Machines and Jig Borers, One Vernon Universal Grinder.

Macklin Company, Jackson, Michigan (161) Grinding Wheels.

Mall Tool Company, Chicago, Illinois (255) Portable power tools and flexible shaft equipment.

Manufacturers Sales Co., Detroit, Michigan (153) Flexible Shaft Machines & Rotary Files.

Marburg Brothers, Inc., New York City (206) Moore Precision Jig Borer, Moore Precision Jig Grinder, Duplex Die and Punch Filing Machine, Angle Master Sine Vise, Berger Hand Tapper and Related equipment.

Martindale Electric Co., The, Cleveland, Ohio (221) Motor-driven flexible shaft equipment, Rotary Files and Burrs, Electrical Etchers, Martindale Protective Masks for Dusty Operations.

Michigan Tool Company, The, Detroit, Michigan (138) Michigan Tool Gear Cutting Tools, Gear Checking Equipment, Cone Worm Gears.

Michigan Unemployment Compensation Commission, Detroit, Michigan (260) Exhibit will describe the selection and placement of skilled men and the role of the State Employment Service in the training and retraining of skilled workers for the National Defense industries.

Micromatic Hone Corporation, Detroit, Michigan (108) Cylinder Honing Tools, Fixtures, etc.

Midway Machine Co., St. Paul, Minn. (300) Millmaster Vertical Milling Machine and Accessory Equipment.

Mid-West Hydro-Pierce Inc., Detroit, Michigan (109) Hydro-Pierce Units-Hydraulic Power Plants, Hydro-Pierce Machines.

Midwest Tool & Mfg. Co., Detroit, Michigan (146) Precision metal cutting tools and accessories, Milling cutters, Adjustable Holders, Counterborers, Countersinks, Drills, End Mills, Form tools, Keyway cutters, Reamers, Spotfacers, Hardened Sleeves, Carbide Tipped Tools.

Minster Machine Co., The, Minster, Ohio (228) One No. 3 O.B.I. Minster Press, one No. 7 O.B.I. Minster Press, one No. 50-4½-48 Minster Press, one Minster Sliding Key Clutch Assembly.

Modern Machine Shop, Cincinnati, Ohio (233) Publication Exhibit.

National Broach & Machine Co., Detroit, Michigan (102) Gear Sound Tester, Combination Gear Tooth, lead and spacing checker, cutting tools and broaches and sample parts produced by these tools.

National Tool Salvage Co., Detroit, Michigan (173) Assorted cutters and special tools as received. Either partly or completely reconditioned pieces together with an operating device which will show the transition from rough to finished work.

National Youth Administration, Detroit, Michigan (410) Metal grinder, Metal shaper, Drill press, Panels of photo murals, Youth operating above equipment.

Nicholson File Company, Providence, Rhode Island (384).

Norton Company, Worcester, Mass. (164) Abrasive products.

O K Tool Company, Inc., The, Shelton, Connecticut (244) Inserted blade milling cutters, reamers, counterborers, facing heads and special combination heads. Lathe, planer, shaper and boring mill tools and holders.

Oakite Products, Inc., New York City (354) Oakite cutting and grinding compounds, Oakite rust proofing materials, Oakite compounds for stamping and forming operations, Oakite materials for cleaning aluminum and its alloys, brass, copper, steel, etc., Oakite materials used in connection with bright nickel and chromium plating. Other educational material will be displayed directly pertaining to defense production. Oakite solution lifting steam gun for specialized cleaning operations.

Ohio Crankshaft Company, The, Cleveland, Ohio (202) TOCCO Junior Type 40-MG-10 Machine for localized surface hardening of various machine tool parts. This unit will be in operation on production parts, such as, gears, gauges, and shafts. Display of cut, polished and etched sections of a variety of TOCCO hardened parts.

Ozalid Products Division, Johnson City, New York (106) One Model E. Whiteprint Machine, one Model F. Whiteprint Machine, one Model C. Whiteprint Machine, one Type 2500 Developing machine and one Type 600 Developing machine.

Parker-Kalon Corporation, New York City (215) Parker-Kalon Cold-forged Socket Screws.

Pease Company, C. F. The, Chicago, Illinois (180) One streamlined continuous blue printing, washing, developing and drying equipment, with an auxiliary printer and blue print dryer.

Peters Company, The, Detroit, Michigan (390) Vanishing patch for mending tracings, mounting cloth, tool design and tracing paper, and Damascus pencils.

Pfeil, Inc., George H., Detroit, Michigan (253) "Bostitch" Steel Stitchers, Stapling Machines and Tackers.

Physicists Research Company, Ann Arbor, Michigan (112) Surface Finish and the Profilometer, Industrial Research, Special Instruments in Industry.

Pike & Company, E. W., Elizabeth, New Jersey (371) "Flash-O-Lens" Illuminated magnifiers and microscopes.

Pioneer Engineering & Mfg. Company, Detroit, Michigan (239) Pioneer Pumps, Rollway Pumps.

Pratt & Whitney Division, Hartford, Connecticut (129) Precision Cutting Tools, Gages, Kellerflex Machines and Equipment.

Porter-Cable Machine Co., Syracuse, New York (208) G-8, B-6, B-3 Machine Sanders-Grinders; BB-10, T-33, T-4 Take-About Sanders; K-75, K-88 Take-About Saws; A-2, A-4 Guild Tool Sander and Saw; No. 2 and No. 6 Milling Attachment.

Producto Machine Company, Bridgeport, Conn. (324) Die Sets, Automatic Die-Feeds, New line of machine tools, vises, set-up blocks and clamps.

Progressive Welder Company, Detroit, Michigan (370) Welding Equipment.

Pyro-Electro Instrument Co., Detroit, Michigan (372) Two Motorized Hardness Testers, two Hand operated Hardness Testers.

Racine Tool & Machine Company, Racine, Wisconsin (265) Pumps and valves.

Ready Tool Co., The, Bridgeport, Connecticut (160) High speed & ball bearing lathe centers, Lathe tools, Grinder Dogs.

Reeves Pulley Company, Columbus, Indiana (122) Various designs and models of REEVES Variable speed transmissions, Vari-speed Motor Pulleys and Motodrives.

Robertson & Donaldson, Detroit, Michigan (361) Atlas equipment lines, Lyon Tool Cabinets, Kalamazoo Metal Cutting Bandsaw, Saw Blades, Vacuum metal Pulleys.

Ross Operating Valve Company, Detroit, Michigan (170) Air Valves.

Rotor Tool Company, The, Cleveland, Ohio (238) Portable Air and Portable High Cycle Electric Tools, Drills, Nut Setters, Screw Drivers, Grinders, Buffers, Polishers, Sanders.

Safety Socket Screw Corp., Chicago, Illinois (328) Socket Set Screws, Socket Head Cap Screws, Socket Head Stripper Bolts, Socket Pipe Plugs, Keys for Socket Screws, Square Head Set Screws and studs.

Scherr Company, George, New York City (241) Precision Mechanics Tools and Measuring Tools.

Schneible Co., Claude B., Chicago, Illinois (320) Schneible Multi Wash Dust and Fume Collection Equipment. Schneible Wear Proof pumps.

Schrader's Son, A., Brooklyn, New York (252) Press Pneumatic Safety Controls, Press air ejections sets, Blow valves, blow guns, quick acting couplers, air hose fittings.

Screw Machine Publishing Co., Inc., Rochester, New York (259) Background design showing issues of the magazine.

Scully-Jones and Company, Chicago, Illinois (142) Standard and special production tools, Tools used in the manufacture of automotive equipment, armaments and by the metal cutting industry.

Severance Tool Mfg. Co., Saginaw, Michigan (349) Midget Milling Cutters and special small tools.

Sheffield Gage Corp., Dayton, Ohio (400) Complete line of gaging and measuring instruments.

Shakeproof Lock Washer Co., Chicago, Illinois (270) SEMS Fastener Units, Thread-Cutting Screws, Lock Washers.

Singer Sewing Machine Co., Detroit, Michigan (223) Industrial Type Sewing Machines.

Skilsaw, Inc., Chicago, Illinois (217) Skilsaw Portable Electric Tools including drills, sanders, saws, portabe and bench grinders, floor sanders.

Smith Company, Roy, Detroit, Mich. (302) Hobart Arc Welders, Una Automatic Welding Heads.

Snyder Tool & Engineering Company, Detroit, Michigan (131) Special Machine.

Sommers & Adams, Co., The, Cleveland, Ohio (395) Vertical Spindle Milling Machine.

South Bend Lathe Works, South Bend, Indiana (336) South Bend Precision Lathes.

Standard Gage Co., Poughkeepsie, New York (101) Gages, Dial Indicators, Comparators.

Standard Shop Equipment Co., Philadelphia, Pa. (262) CAD Nuts, Finished Washers, "U" Clamp, Single End Clamp, Double End Clamp, T-Slot Nuts, Wedges, Step Blocks, Packing Blocks, Bolts.

Stanley Electric Tool Div. The Stanley Works, New Britain, Conn. (213) Electric Tools, Accessories etc.

Starrett Company, The L. S., Athol, Massachusetts (157) Precision tools, dial indicators, ground flat stock, hacksaw blades, metal cutting band saw blades and steel tapes.

"Steel", Cleveland, Ohio. (168) Publication exhibit.

Sterling Tool Products Co., Chicago, Illinois (373) Portable Electric Sanding Machine, Portable Pneumatic Sanding Machine, Air Filter Traps.

Stokerunit Corporation, Milwaukee, Wisconsin (110) Simplex Precision Boring Machines.

Strelinger Co., The Charles A., Detroit, Michigan (166) Steel Stitcher, Box Stitcher.

Strong, Carlisle & Hammond Co., The, Cleveland, Ohio (115) Mac-it Alloy Steel Screws.

Stuart Oil Co., D. A., Chicago, Illinois (174) Machine Tool Lubricants.

Sun Oil Company, Philadelphia, Pa. (389) Sun Industrial Petroleum Products.

Sunnen Products Co., St. Louis, Mo. (350) Honing Machines.

Super Tool Company, Detroit, Michigan (133) Tungsten Carbide metal and tipped tools.

Taft-Peirce Mfg. Co., The, Woonsocket, Rhode Island (364) Cylindrical plug and ring gages, thread gages, adjustable snap gages and various types of special gages used in defense work. Tool room specialties, magnetic chucks and accessories, samples of contract machine work pertaining principally to aircraft industry.

Texas Company, The, Chicago, Illinois (386) Cutting fluids and machined parts.

Tinnerman Products, Inc., Cleveland, Ohio (232) Speed Nuts, Speed Clips.

Toledo Scale Company, Toledo, Ohio (352) Toledo Scales and Precision Force Measuring Devices.

Tomkins-Johnson Company, The, Jackson, Michigan (230) The RIVITOR, The CLINCHOR, Air and Hydraulic Cylinders, Brownie Coolant Pumps.

Tool-Die-Machine Progress, Cleveland, Ohio (396) Publications exhibit.

Tool Engineer, The, Detroit, Michigan (136) official publication of A.S.T.E.

Towmotor Co., Detroit, Michigan (152) Towmotor Lift Trucks.

Tubular Rivet & Stud Co., Wollaston, Mass. (346) 2088 Machine, 71F Machine, 42 U Machine, 40 Special Machine.

Ultra Lap Machine Co., Detroit, Mich. (212) Ultra Lap Machine and a display of precision lapped parts.

Union Carbide Company, New York City (362) Haynes Stellite Metal Cutting Tools and other Haynes Stellite products.

United Aircraft Corp., East Hartford, Conn. (245) Cutaway Model of Pratt & Whitney Airplane Motor and display of Propeller and Propeller parts.

Univertical Machine Co., Detroit, Michigan (390) Bench Type Vertical Mill.

Vickers, Incorporated, Detroit, Michigan (178) Hydraulic Poser Transmission Equipment, Pumps, Valves, Fluid Motors.

Vinco Corporation, Detroit, Michigan (242) Plug Gages, Ring gages, Spline gages, Profile gages, Master Gears, Index Plates, Involute Checker, Optical Inspection Dividing Head, Model B-1 Angle Tangent to Radius Dresser, etc.

Weldon Tool Company, Cleveland, Ohio (246) Cutting Tools, End Mills, Form Tools for Screw Machines, Counterbores.

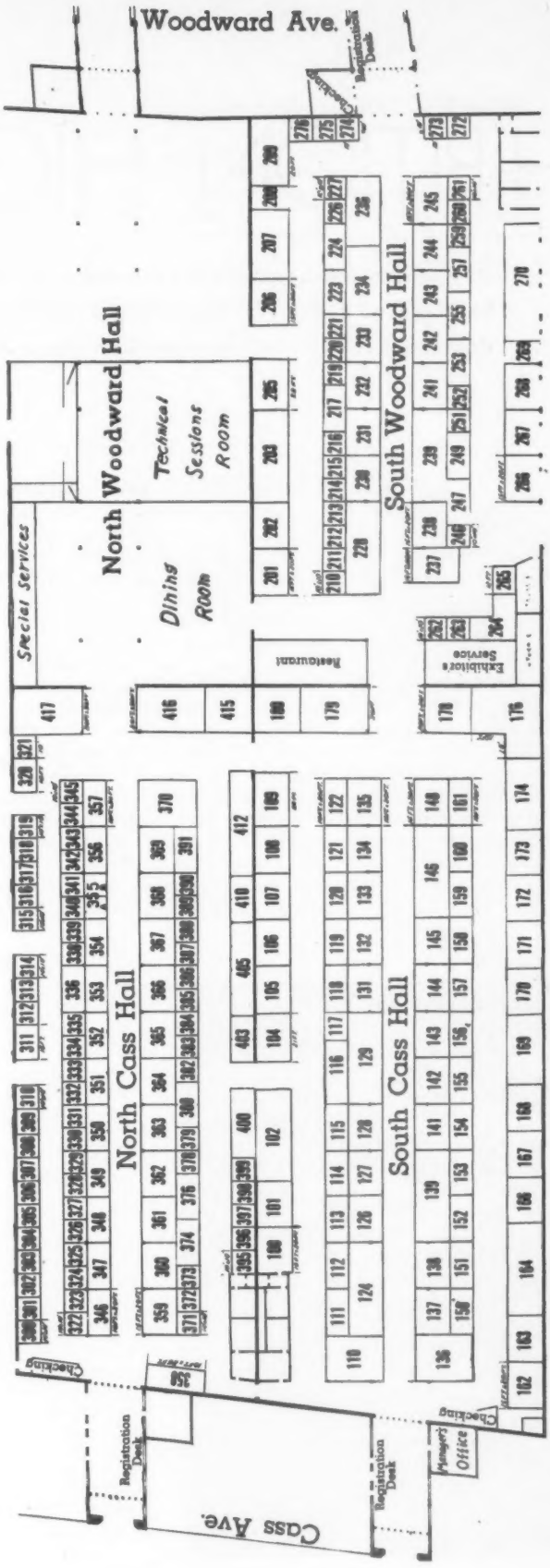
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. (179) Welding, Motors, Control Gearmotors.

Wetmore Reamer Co., Milwaukee, Wisconsin (398) Special reamers and Boring Bars, Tools used in the National Defense Program.

Williams & Company, J. H., New York City (382) Drop-Forgings and Drop-Forged tools.

Wilson Mechanical Instrument Company, Inc., New York City (211) Rockwell Hardness Tester, Rockwell Motorized Hardness Tester, Rockwell Superficial Hardness Tester.

Ziegler Tool Company, W. M., Detroit, Michigan (210) Ziegler Floating Tool Holders.



1941 Machine and Tool Progress Exhibition

A floor plan of Detroit's Convention Hall, showing scene of sessions of the American Society of Tool Engineers annual meeting, and location of exhibits.

EXHIBITION HIGHLIGHTS

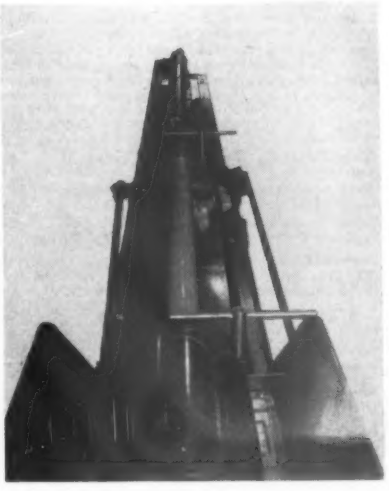
New and improved equipment, accessories, and materials which will be displayed at the 1941 Machine and Tool Progress Exhibition in Convention Hall, Detroit, Michigan from March 25 through March 29.

AMERICAN HYDRAULIC GUN RIFLING MACHINE

The new American Hydraulic Gun Rifling Machine, Booth 247, said to be the first hydraulic machine of its type, was especially designed for production (constant helix) rifling of 105 MM Howitzer. All of the 36 spiral grooves .030 deep are broached simultaneously. A series of 24 cutters are run through the rifle barrel in sequence, each cutter removing a slight amount of metal from each groove. Approximate time for complete broaching of a barrel is an hour and a half—an unusually high production for work of this type. A high speed steel hardened and ground cutter is pushed through the gun. Each cutter takes a chip of .001 to .002 from each groove.

The master lead bar is hollow to permit a generous supply of coolant at the cutting tool. This lead bar is driven laterally through a roller thrust bearing by the cylinder slide unit, and spiraled by a driving plate, adjustable for index. The driving plate unit is also provided with a back lash take-up adjustment. The driving plate unit is mounted in a casting integral with the quill support and front support for the part. This design provides a positive alignment for these details.

Although the machine itself, which weighs 24,000 pounds, will not be on display, there will be illustrations, diagrams, and sample parts which together will clearly explain its operation.



SOUTH BEND TOOL ROOM LATHE

The new Series "S" 16-inch Tool Room Lathe will be featured by the South Bend Lathe Works in Booth 336. This lathe has a number of features which save time on tool room operations, and its design makes it especially adapted to fine tool room work. Convenient controls save time and effort; large diameter hand wheels facilitate precision adjustments. Adjustable micrometer collars are large and have clear-cut graduations. Spindle speeds range from 21 to 725 rpm., and the direct belt drive is said to provide smooth operation.

The telescopic taper attachment is permanently attached to the lathe carriage and is always ready for use. Tightening two binding screws engages the taper attachment.

DUMORE HIGH SPEED GRINDER

A new rugged high speed hand grinder will be featured in the Dumore Company exhibit in Booth 143. This grinder has an idling speed of 22,000 rpm. yet weighs only four and one quarter pounds and has a maximum temperature rise of sixteen degrees centigrade. It can be supplied with ⅛" or ¼" capacity chuck.

This unit is particularly notable for its compactness, ruggedness, and balance. One important feature is the spun glass air filter which prevents foreign particles from damaging motor parts. It is equipped with 1/7 HP universal motor which can be operated on either alternating or direct current.

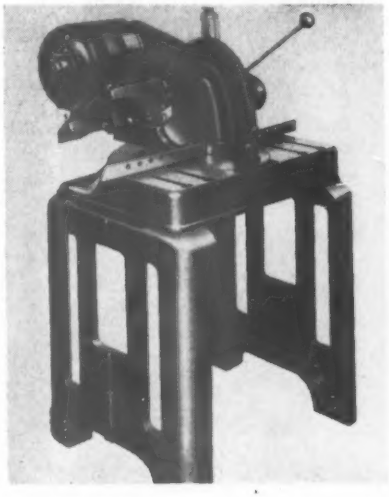
STANDARD DIAL SNAP GAGES

Snap Gages set to fixed limits are eminently suitable where comparatively wide tolerances are allowed, and the naturally varying pressure does not noticeably interfere with them. If close tolerances have to be maintained, to the order of .0001 inches or more, a refined gaging means becomes desirable. A new Standard Dial Snap Gage has been designed for such a need and will be a feature of the Standard Gage Company exhibit, Booth 101.

The closest limits can positively be checked, as the pressure applied is constant and measurements are invariably repeated. In application to turning and cylindrical grinding, the Dial Snap Gage enables the operator to determine when the piece approaches the plus limit and to control the feed accordingly, thus preventing rejection. The internal mechanism is said to be shockproof, so that the indicator is completely protected against excessive impacts. The gaging faces are tipped with Tungsten Carbide.

HOLO KROME SOCKET SCREWS

A dramatic, animated display unfolding the story of Fibro Forged Socket Screws will be featured by the Holo-Krome Screw Corporation in Booth 156. The display will present an interesting and instructive story for users and prospective users of Socket Screws. All Holo-Krome products will be on display.



DELTA NON-FERROUS CUT-OFF MACHINE

A remarkable cut-off machine for cutting copper, aluminum, brass with polished smoothness will be featured by The Delta Manufacturing Company, Booth 139. This is truly a case where a machine must be seen to be appreciated. No amount of description can explain the smooth cut which this machines makes.

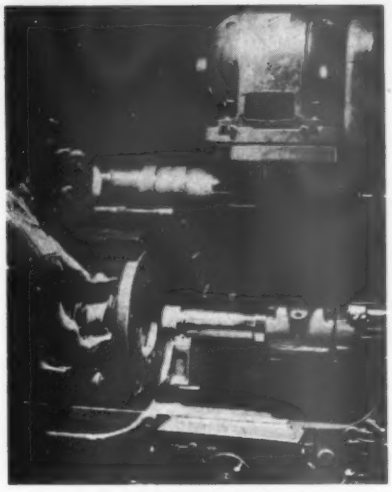
The success of the machine lies in the design of the high speed metal cutting blades used. Three blade have been developed which meet the requirements of non-ferrous metals. An oiling device automatically lubricates the blade during the cut. Because of the quality of cut produced, the expense of additional polishing and burring operations may be eliminated.

Additional Highlights Will Be Found Included in the Next 46 Pages.

GENERAL ELECTRIC TRI-CLAD MOTORS

The new Tri-clad motor, which General Electric is exhibiting in Booth 107, is designed to meet the modern trend in machine tool design. The frame and end-shield construction minimize contact of vital motor parts with foreign material such as lubricants, coolants, chips, and tacks, while also protecting it against accidental blows in handling or similar rough usage. Three principal features of the motor are: (1) better mechanical protection through the use of a cast-iron box-type frame; (2) better electrical protection made possible by Formex, a new type magnet wire; and (3) better protection against operating wear and tear through a new design of sleeve bearings.

Also of particular interest will be the display of a new line of fractional-horsepower motors developed especially for machine tool applications.



In Grinding...

DON'T OVERLOOK THIS VERY IMPORTANT FACTOR!

BETTER GRINDING with CODOL

1. Reduced wheel loading and glazing
2. Transparency for closer work
3. Less frequent dressing
4. Rapid chip settling
5. Lower operating temperatures
6. Rust preventative
7. Finer finishes
8. Economical

Order a Trial Drum Today

Stuart's CODOL
Liquid Grinding Compound

100% grinding efficiency is best accomplished by careful consideration of the grinding fluid factor. The vital part which a properly applied, specialized grinding lubricant plays is too often overlooked. It can mean unnecessary sacrifice in quality of finish, production speed, and cost of wheels.

These handicaps can frequently be eliminated by going over your grinding problems with a STUART OIL Engineer. His highly specialized experience in the application of modern grinding fluids will help you secure top efficiency.

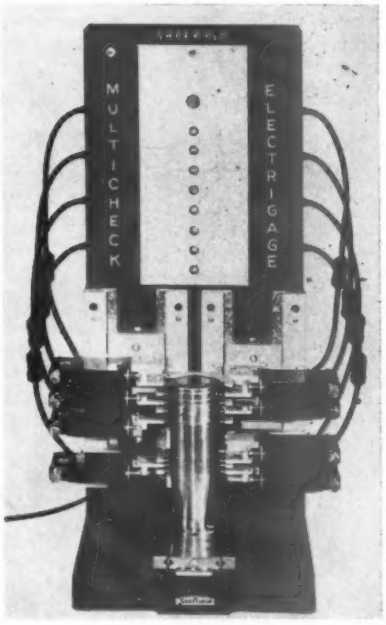
ASK FOR this informative booklet. Free working sample upon request. Please send your name on Company Letterhead.

Be sure to visit the Stuart Oil Exhibit — Booth 174, at the 1941 Machine Tool Progress Exhibition, Detroit, March 24-29.

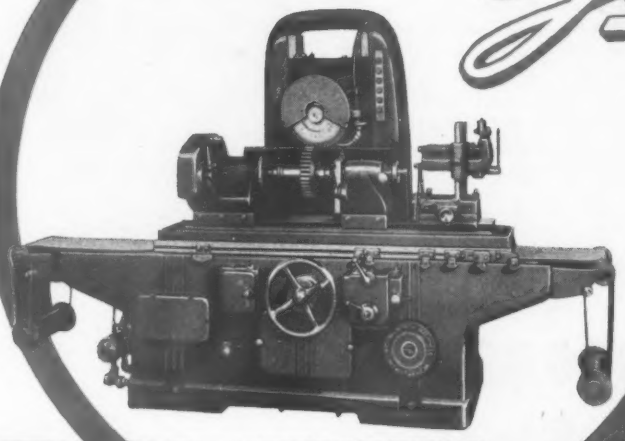
For All Cutting Fluid Problems
D. A. STUART OIL CO.
Chicago, U.S.A. • LIMITED • Est. 1865
Warehouses in All Principal Metal Working Centers

SHEFFIELD MULTICHECK ELECTRIGAGE

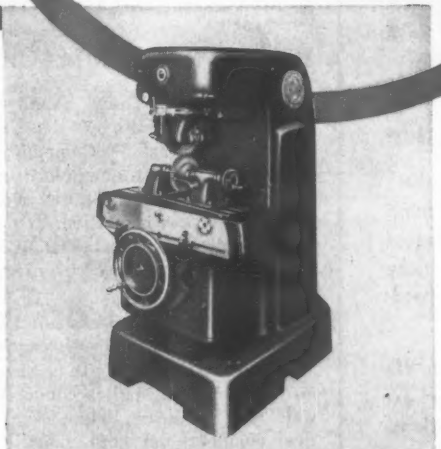
The Sheffield Multicheck Electrigage will be a feature of the exhibit by the Sheffield Gage Company in, Booth 400. This gage checks a number of dimensions simultaneously, showing by individual signal lights whether each dimension is undersize, oversize, or within prescribed tolerances. It can be furnished with a master signal integrating all individual dimension signals. Will handle work parts as large as desired and is used extensively for checking cartridge cases and shell bodies.



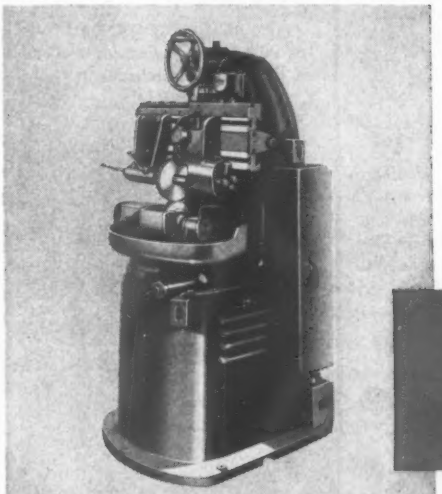
IF YOU *Grind* GEARS



HERE IS THE WAY TO *Save* BOTH TIME AND COST



RED RING GEAR FINISHING MACHINE



RED RING GEAR LAPPING MACHINE

In hobbing the gear, leave enough stock (.005" to .016") to take care of hobbing errors and fire distortion. Shave the green gear on a Red Ring Finishing Machine to eliminate hobbing errors and then harden.

After hardening, use a Red Ring Gear Grinding Machine to reduce the overall error to less than .001", but without sparking the wheel out. Sparking out accounts for at least half the time required by the grinding operation. It is entirely unnecessary when final finishing is done on a Red Ring Lapping Machine.

Lapping removes the fuzz left on the tooth surface by the grinding wheel, leaves tooth surfaces smooth and corrects all remaining errors to whatever degree of accuracy is desired.

This is not only faster and more economical than relying exclusively on the grinder, but it also reduces the percentage of scrap and assures greater durability and longer gear life.

Write for bulletins on Red Ring shaving, grinding and lapping.

NATIONAL BROACH AND MACHINE CO.

5600 ST. JEAN • DETROIT, MICHIGAN

VICKERS VARIABLE DISPLACEMENT FLUID MOTORS

Variable speed and torque characteristics, coupled with high overall mechanical efficiency are said to be the features of the new variable displacement fluid motors which will be a feature of the exhibit by Vickers Incorporated in Booth 178. Designed for operation at exceptionally high rotative speeds and at pressures up to 1500 psi these motors provide a compact unit for the development of rotary mechanical power from fluid pressure. Available in both foot and face mounting arrangements in sizes ranging from 3 to 300 HP they may be mounted in the most convenient location so as to eliminate mechanical power transmission equipment such as gears, clutches, and shafts. They are readily reversible and also may be stalled indefinitely under load without damage. Various manual and automatic volume control arrangements are available for the control of torque and speed as may be required, either directly or from a remote control station.

Get Better Response with Ryerson V. D. Steel

Better Dies, Punches, Chisels . . . Easier Machining . . . Easier to Harden . . . Less Expensive

Ryerson VD Steel solves a threefold production problem in tool-making . . . . quality steel; ease of machining; low cost. Splendid water-hardening results are always assured, because VD Steel offers the widest range of hardening temperatures for any steel in its group. It takes no tricky methods to produce excellent work. Even heating beyond the usual hardening range, has no effect on its fine grain structure.

Many successful shops find it profitable to standardize on Ryerson VD Steel as their only water-hardening steel. Its treatment is so simple that experience gained from heat treatment can serve in all future applications. Learn more about this low cost VD Steel today by sending for a descriptive bulletin telling of this remarkable steel.

Send the coupon, or write Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Boston, Buffalo, Philadelphia, Jersey City.

RYERSON STOCKS INCLUDE:

Structurals	Tool Steel	Nuts, Bolts
Bars	Shafting	Rivets, etc.
Plates	Tubing	
Sheets	Stainless	
Alloys	Welding Rod	

Name ..... Position .....
Company ..... State .....
Street ..... City .....
TEAR OUT AND MAIL TODAY!

RED RING SOUND TESTING MACHINE

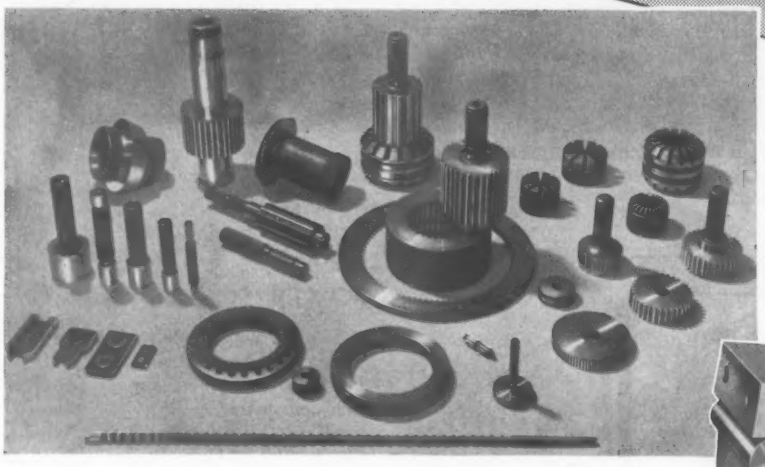
The new "Red Ring" Sound Testing Machine displayed by the National Broach and Machine Company, Booth 102, is used to determine before assembly whether gears will be quiet enough in operation to pass inspection. It thus prevents costly tear-down work to replace gears that are found to be too noisy in the assembly.

The machine is entirely self-contained and needs no sound room. It may be used anywhere in the plant. It is easy to set up and operate and accommodates a wide range of gears. The special acoustical chamber and horn magnifies gear noise fifty times, showing the intensity and the character of the sound as an aid to diagnosing gear errors.

Also on display will be Lead Comparator and Gear Testers as well as a variety of Broaching Machines.

The Focal Point Of The Show

BOOTH 242



A representative selection of the gages and precision tools manufactured by Vinco. These and many more will be on exhibition at the A.S.T.E. Show.

•

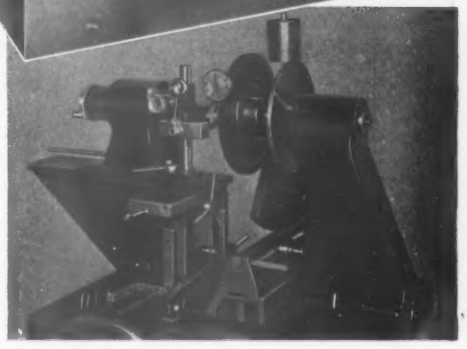
A sine bar, typical of the extreme precision work for which this company is internationally known.

For the first time, Vinco will introduce at the Show two new pieces of equipment which offer features of sensational interest. They are:

(A) VINCO INVOLUTE CHECKER

This machine is built for the inspection of spur or helical gears from the smallest to 20" pitch diameter and will take 15" between centers with the standard tailstock slide. Its many unusual features of design and operation make its introduction of outstanding importance.

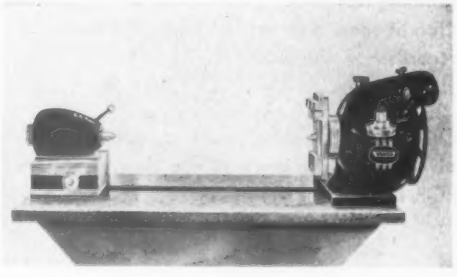
A

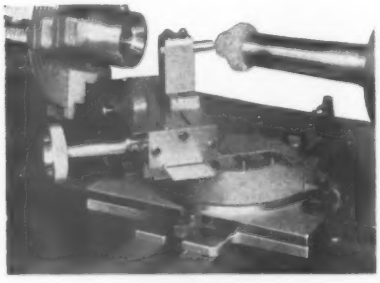


(B) VINCO OPTICAL MASTER INSPECTION DIVIDING HEAD

This is an instrument of extreme accuracy used for final inspection of spacing such as gear teeth, master index plates, splines, etc. In conjunction with the Vinco Cam Comparator, the Dividing Head is used for checking the angular relation and amount of rise on camshaft cams. It is the result of many years of development and experimentation by the Vinco Corporation. Since its recent announcement to the trade, several changes have been made in its design and construction. The accuracy and performance of this instrument now surpasses all previous expectations. Be sure to see it!

B





Also to be shown, is the well known Vinco Angle Tangent to Radius Dresser—used throughout the world for accurate, low-cost dressing of radii and angles tangent to radii on abrasive wheels.

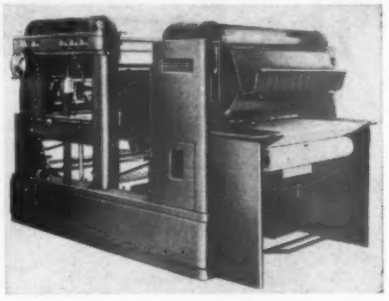
If you cannot attend the Show, write for full information on the products being manufactured by Vinco.

VINCO Corporation

9115 SCHAEFER ROAD DETROIT, MICH.

PEASE CONTINUOUS BLUE-PRINTING MACHINE

A new streamlined continuous blueprinting machine, the "22-16" will be featured in the C. F. Pease Company exhibit in Booth 180. This equipment is suitable for use where production requirements do not require the high speed of Model "22" but where the features of this model are wanted. These features include Sliding Contact which smoothes out all inequalities present in all tracings and gives 24¾ inches of uninterrupted exposure area; three speed lamp control which allows the lamps to be operated on 10, 15, or 20 amperes as desired, avoiding frequent dryer heat changes because the mechanical operating speed remains the same, the lamp amperage varying according to the tracing being reproduced; and Actinic Arc Lamps which furnish uniform light emission, burn for 45 minutes without interruption, and resume instantaneously.



CHECK YOUR TOOL RECONDITIONING DEPARTMENT FOR SAVINGS!

IF you're looking for savings, look to your TOOL ROOM; Savings Start There!

• • •

Correctly ground cutting tools last longer between grinds — produce more accurate work — reduce tool breakage — cut down scrap and lower machine down-time.

• • •

Do away with slow-costly hand controlled grinding methods — INSTALL Oliver Tool Conditioners and set up REAL Production records.

• • •

Oliver Grinders keep your tools functioning at new tool efficiency all the time. SEND FOR DETAILS.

"Don't neglet your tool room."

• • •

Cut illustrates the new ACE Universal Tool and Cutter Grinder — handles a complete range of cutters and tools — simple to set-up, easy to operate — efficient on all operations.

THE OLIVER LINE:

Drill Grinders, Tap Grinders, Face Mill Grinders, Tool and Cutter Grinders, Point Thinners, Tool Bit Grinders, Die Making Machines.

OLIVER INSTRUMENT COMPANY

1440 EAST MAUMEE STREET .:. ADRIAN, MICHIGAN

DETROIT POWER SCREWDRIVERS

Two working models of power screwdrivers will be on display in the Detroit Power Screwdriver Company Booth 155. The demonstration will show how easily small screws are handled and also the speed with which larger screws are driven.

HARDINGE SJOGREN SPEED COLLET CHUCK

The Sjogren Speed Collet Chuck will be among the items displayed by Hardinge Brothers in Booth 127. An almost effortless turn of the hand wheel in the desired direction is said to open or close the collet. Thus work may be quickly released or gripped. No time need be wasted

in looking for a wrench or key since the handwheel is a part of the chuck. Designed for tool room and engine lathes, the chuck may also be adapted to milling machines, turret lathes, grinders, and special production machines.

LATROBE DOUBLE SIX

The newest member of Latrobe's Electrite family... a high-speed steel of vital importance to the nation's defense program!

☆ *Its Tungsten and Molybdenum content gives DOUBLE-SIX unusual toughness and the ability to meet the most varied and exacting cutting applications.*

☆ *It is more refined in grain size and structure, and provides improved cutting efficiency at a lower cost!*

New Bulletin on DOUBLE-SIX now ready...write

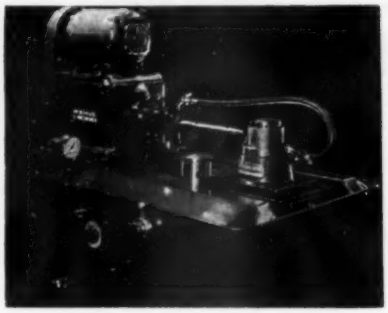
The Latrobe

MARK of LESCO BETTER TOOL STEELS

6

ELECTRIC STEEL COMPANY

MAIN OFFICES *and* PLANT · · · · LATROBE · PENNSYLVANIA



MICROMATIC HONE CONTROL UNIT

A new development, the Automatic Microsize Control Unit, will be displayed by the Micromatic Hone Corporation, Booth 108. This unit generates accurate sizing in high production uniformly within limits from .0002 to .0005 inches. The mechanism is arranged with visual dials to facilitate setup, adjustment, and complete operation control. Additional controls provide for instantaneous abrasive expansion only to average rough bore size by hydraulic control; a controlled, uniform rate of abrasive expansion feed-out to uniform size and finish, under variable pressure; and expansion collapse of the abrasive members always to the same starting diameter, and automatic compensation for average stone wear.

MUNITION PARTS MACHINED BY STUART OIL

Munition and airplane parts machined with Stuart Oil products will be presented by the D. A. Stuart Oil Company in Booth 174. Included will be data on the new developments in metal working oil products required by these items of defense production.

There will be an assortment of stainless steel and other alloy steels cut, ground, or deep drawn with the various Stuart compounds.

CARPENTER STEEL "MAGIC MIRROR"

To meet the big problems arising in the selection of the right analyses for tool steels, the Carpenter Steel Company, Booth 363, has worked out a new systematized method. Starting with a particular tool, such as a mandrel, a simple series of steps leads the tool maker from the general classification of mandrel to the specific type of mandrel desired. To dramatize and illustrate this new development the Carpenter Exhibit will feature a "magic mirror". You will be able to ask the mirror which steels to use for any tools you may be planning to make. On pushing a button, the right answer will materialize before your eyes. The principles behind the machine have been set down in black and white for easy use in the tool room.

JARVIS

Flexible Shaft Machines

Flexible Shafting

Tapping Attachments

Quick Change Chucks & Collets

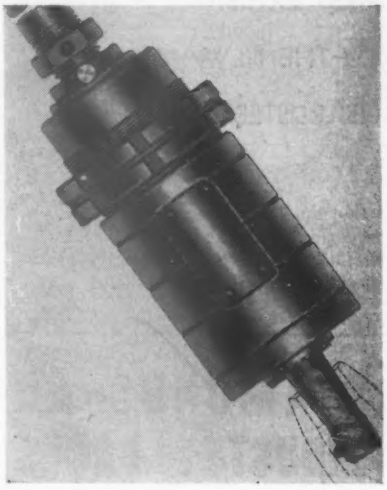
Ground from The Solid Rotary Files

WESTINGHOUSE VARIABLE SPEED DRIVE

A new simplified a-c variable speed drive, suitable for a 10:1 speed range, will highlight the Westinghouse exhibit in Booth 179. No exciter or control wiring is required in this drive, which consists of a standard squirrel-cage induction motor driving a d-c series wound generator. The generator furnishes power to a d-c motor which drives the external load, the speed being controlled by a shunting rheostat which varies the generator series field.

These drives are applicable for driving machine tools, conveyors, or similar equipment requiring wide speed range where alternating current only is available. Capacities range from one to fifteen HP.

THE CHARLES L. JARVIS COMPANY, MIDDLETOWN, CONN.



GAIRING ACTUATING SHELL TOOL

A recently designed Gairing Actuating Shell Tool will be prominently displayed in the Gairing Tool Company Booth 126. The tool automatically expands while cut is taken on the inside of the shell nose to machine the radii to the end of the bottle neck. The cutting tool is fed radially outward as it moves into the shell cavity to suit the changing contour of the shell interior on 3.45 shells and automatically retracts from cutting position. The operation is performed after the fuse hole is bored, the end faced to length, and to a conical seat and the end of the shell chamfered.

BROWN & SHARPE MAGNETIC BLOCKS WITH CONTROL SWITCH

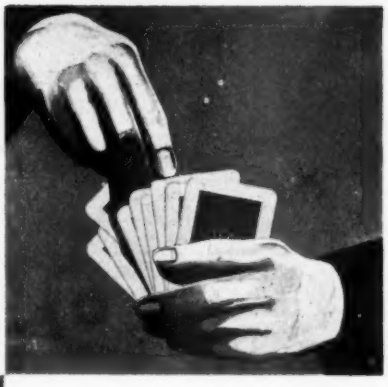
The new Magnetic V Blocks No. 750D will be included in the display of the Brown & Sharpe Manufacturing Company, Booth 104. This block, like other Magnetic Holding Tools in the line, employs the principle of permanent magnets and is unique in that it has a long, cylindrical magnet which can be turned readily by a control at the front of the block to hold or release work placed in the V. It requires no clamps, and is convenient for making quick setups and holding work securely. When turned on the block itself will adhere firmly to a magnetic surface. It can be left turned on as long as desired without damage to either work or block.

FIRST EXHIBIT OF THE NEW "HARDSTEEL" DRILLS

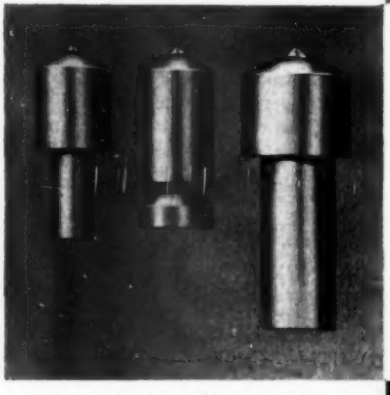
For the first time "Hardsteel" drills will be exhibited by the Black Drill Company in Booth 351. These new drills make it possible to drill, counterbore, countersink, or tap steel after it has been hardened, and in approximately the same length of time and at the same drilling speeds as soft steel with ordinary drills. They have been used successfully in any hardness of steel after hardening up to 80-82 Rockwell C.

No new machinery is required for the use of the drills. A supply of various types of hardened steel will be available and any interested person may make his own Rockwell test and work any piece with a "Hardsteel" drill.

DIAMONDS ARE TRUMP WHEN INDUSTRY FACES AN EMERGENCY

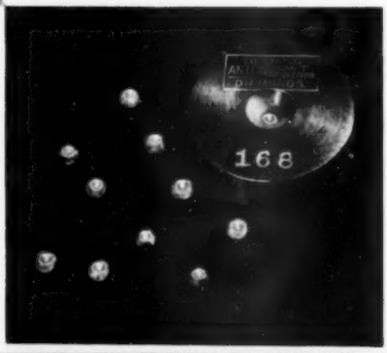


WHEN an emergency like the present one arises, the demand for diamond tools always increases greatly. Many concerns, faced with the necessity of producing more, then learn of the wonderful capacity of industrial diamonds for the first time. They find that they can cut hard, abrasive materials faster and more accurately than by any other means.



(Left to right) Landis Nib, Norton Nib, Cincinnati Nib.

If you are today handicapped by the lack of badly needed machine tools, it will pay you to investigate the possibilities of using diamond tools. Undoubtedly, you will find that you can turn out more work with the machines you now have if you use diamond cutting tools. The increases may be sufficient to enable you to handle present requirements without the need of additional machines or, at least, to keep you from falling too far behind before additional machine tools can be delivered.



Prominent as an importer of industrial diamonds for more than thirty years, Anton Smit and Company controls all steps in the production of diamond tools — mining, importing, tool making, and servicing. Large stocks of Bortz, Ballas, Carbons, Points, Splint, Crushing Boart, Powder, etc., in all sizes and qualities on hand. Send for illustrated folder and prices, or submit blue print for shaped diamond tools.

ANTON SMIT & CO., INC.
24 STATE ST. (Near Battery) NEW YORK, N.Y., U.S.A.

CONTINENTAL'S DOALL PRODUCTION SURFACE GRINDER

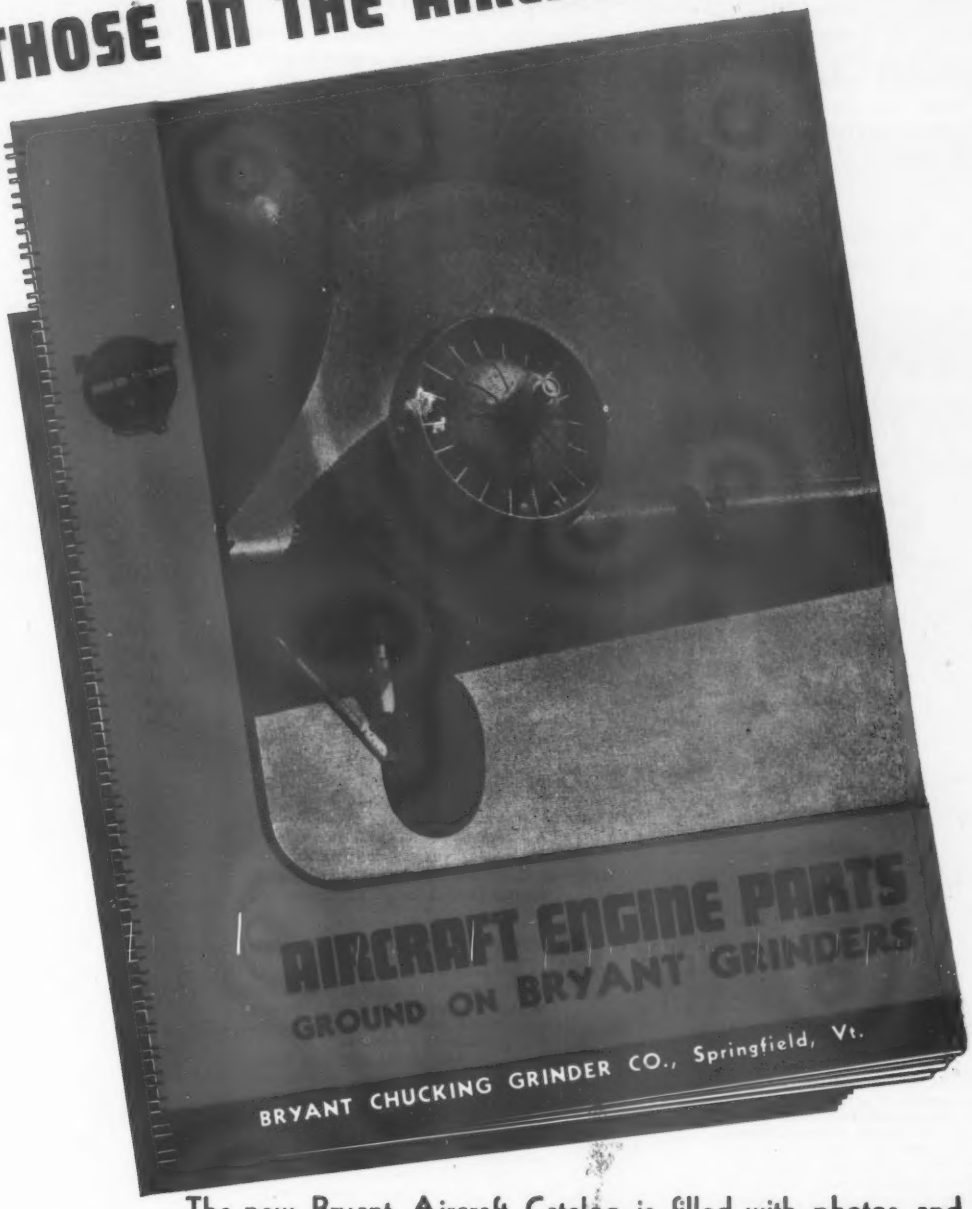
The new DoAll Production Surface Grinder will be featured by Continental Machines in Booth 358. This machine has nine by eighteen inch capacity and is built either for wet or dry grinding. The strength and rigidity built into this machine assures flat surfaces. At the critical

moment when the removal of any surface must be brought down to a final .0001 or .0002 inches, this machine will be found useful. Absolute control over the vertical feed is provided from .001 to .0001 inches. hydraulic traverse zero to fifty fpm infinite. Cross movement is also infinite zero to .125 inches.

CONTINUOUS DEMONSTRATION OF BARNES HACK SAW BLADES AND SAWS

A continuous demonstration of the metal cutting abilities of Barnes Hack Saw Blades and Band Saws will be featured in the exhibit of the W. O. Barnes Company, Booth 135. Red Arrow Blades (18-4-1 high speed steel), Barnes Service Blades (Molybdenum) and low tungsten hand blades will be shown cutting all types of metals. Sheet metal cutting and die sawing will be among the unusual applications demonstrated.

FOR THOSE IN THE AIRCRAFT INDUSTRY



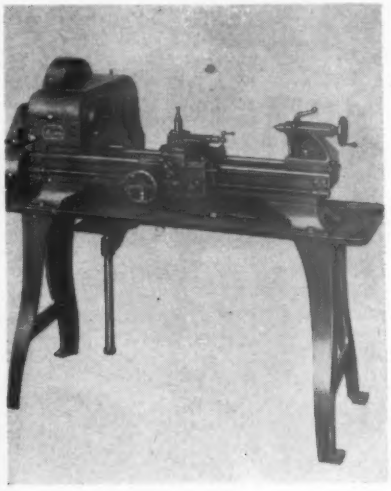
The new Bryant Aircraft Catalog is filled with photos and line drawings showing Bryant Internal Grinders used in the production of aircraft engine parts. It also shows how the Bryant feature of single slide and three point control assists in meeting the exacting requirements of the Aircraft Industry in its National Defense Program. A request on your company letterhead will bring your copy without obligation. Just write—

BRYANT CHUCKING GRINDER CO., Springfield, Vermont

LOGAN ENGINEERING METÁL CUTTING LATHE

A new metal cutting lathe will be displayed by the Logan Engineering Company in Booth 120. This lathe has been built primarily for factory and machine shop use. The spindle mounting in the head stock is with ball bearings, which permits running at higher speeds. The pre-loaded bearings provide less wear and greater precision.

The back gear mechanism is enclosed in the headstock and is controlled by a knob on the front. The countershaft assembly is carried on a three point suspension and is completely insulated by rubber at all points of contact to prevent vibration being transmitted to the lathe.

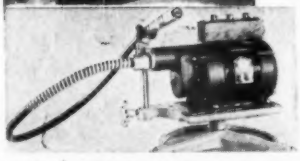


PRODUCE MORE NOW! WITH

WALKER-TURNER MACHINE TOOLS

WALKER-TURNER OFFERS PROMPT DELIVERY OF HIGH-SPEED PRODUCTION MACHINE TOOLS!

It has been said that "they also serve who only stand and wait." But why wait? If vital production is being held up waiting for the delayed delivery of heavy machine tools, this is an ideal time to investigate the advantages of using Walker-Turner Machine Tools for those operations for which they are suited. It is likely that you will find—as so many other manufacturers have—not merely the solution to an emergency problem, but a genuinely better way to do certain jobs and at substantially lower cost. Large scale production line methods of manufacture enable us still to offer reasonably prompt delivery of these accurate, durable, dependable machines, in spite of greatly increased demand.



NEW RADIAL DRILL for drilling, tapping, routing, light profiling. Drills to center of 52" circle. Wide range of spindle speeds. Extremely accurate.

WALKER-TURNER FLEXIBLE SHAFT MACHINES enable the user to take the machine to the work.

BACK GEARED METAL-CUTTING BAND SAW. Extremely wide range of speeds enables it to cut all ordinary materials.

SEVERAL MODELS OF MOTOR GRINDERS are available. Totally enclosed dust-sealed motors and precision ball bearings. Other quality features.

BENCH MODEL DRILL PRESS. Floor Models also available. Unusually accurate spindle. All vital parts machined to unusually close tolerances.

WALKER-TURNER MACHINE TOOLS

DRILL PRESSES • LATHES • BAND SAWS • BENCH SAWS • TILTING ARBOR SAWS • JIG SAWS • RADIAL SAWS RADIAL DRILLS • BELT AND DISC SURFACERS • JOINTERS • GRINDERS SPINDLE SHAPERS • FLEXIBLE SHAFT MACHINES • CUSTOM BUILT MOTORS

SEND FOR LATEST CATALOG TODAY

WALKER-TURNER CO., INC.
4931 Berckman Street, Plainfield, N. J.
Please send me your latest catalog.

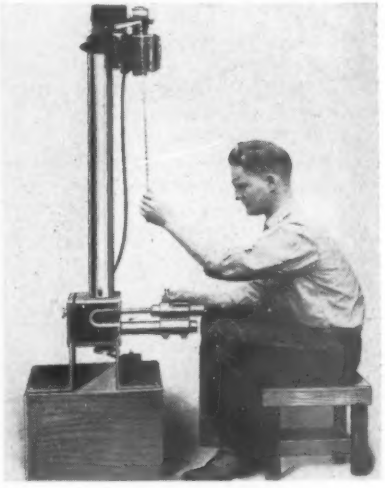
Name _____ Title _____
Company _____
Street _____
City _____ State _____

walker-Turner COMPANY, INC. PLAINFIELD, N.J.

WALKER-TURNER MACHINE TOOLS
FOR METAL, WOOD AND PLASTICS

CINCINNATI TOOL TESTS CHISELS FOR HARDNESS AND TOUGHNESS

A hardness and toughness test for cold chisels will be featured in the Cincinnati Tool Company Booth 322. Each Hargrave chisel is tested in two ways: first the cutting edge is tested on a heat-treated spring steel bar, and, second, each side



of the blade is given a blow in a power guillotine. Any chisel with flaws will break.

A portable tester was built at the suggestion of Army Air Corps Engineering at Dayton. It is this tester which will be on display at the Show.

REMEMBER!
THE A.S.T.E.—TOOL ENGINEER HOST BOOTH IS 136

A GUARANTEED CLASS 3 FIT AT GOOD PRODUCTION SPEEDS WITH *Jones & Lamson* SELF-OPENING RADIAL CHASER TYPE DIE HEADS

YOU can have faster production and lower costs on studs, bolts, machine screws and similar vital parts with Jones & Lamson Self-opening Radial Die Heads. Made in both stationary and revolving types, these die heads are guaranteed to hold lead correct within .001" per inch and give you a Class 3 Fit (American National Standards). Thus you can be sure of external threads to match the accuracy of internal threads produced by your ground thread taps.

Particularly recommended for heavy duty threading, Jones & Lamson Radial Die Heads are furnished with either ground or ground and lapped thread chasers. These chasers are ground after hardening so that any distortion, decarbonization or crystallization is eliminated in the finished Chaser.

Write today for illustrated booklets.
No. 139—Jones and Lamson Radial Dies.
No. 97—Tangent Dies with Ground Thread Chasers.

PROFIT PRODUCING MACHINE TOOLS

JONES & LAMSON

MACHINE COMPANY

SPRINGFIELD, VERMONT, U. S. A.

MANUFACTURERS OF: SADDLE & RAM TYPE UNIVERSAL TURRET LATHES . . . FAY AUTOMATIC LATHES . . . AUTOMATIC DOUBLE-END MILLING & CENTERING MACHINES . . . AUTOMATIC THREAD GRINDING MACHINES . . . COMPARATORS . . . TANGENT AND RADIAL, STATIONARY AND REVOLVING DIES AND CHASERS.

APEX PRODUCTION TOOLS

TIME SAVING COST-CUTTING TOOLS

Apex Safety Friction Chuck

Apex Stud Setter

Apex Safety Friction Tapping Chucks are tools that will enable you to drive taps to their capacity on thru or blind holes without tool breakage—also recommended for stud and nut setting—Quick change of tools.

Universal Joints—Commercial and Aircraft—strong and smooth running—cannot over-travel their maximum working angle.

Universal Joint Socket Wrenches—For all types of electric and air-nut runners.

Floating Tool Holders—Parallel Float only and the Universal with both parallel and angular float.

Complete Line of Quick Change Drill Chucks—Positive Drive and Vertical Float Drilling and Tapping Chucks with collets and accessory tools for drilling, tapping, stud and nut setting.

Write for catalog #14.

Floating Tool Holder with Quick Change Collet

Universal Joint

Universal Joint Socket Wrench with Adapter

Universal Joint Socket Wrench (Tension Type)

Floating Tool Holder with Inserted Sockets

THE APEX MACHINE

1025 South Patterson Boulevard

APEX POWER BITS, DRIVERS

for PHILLIPS SCREWS SLOTTED SCREWS CLUTCH HEAD SCREWS

POWER BITS

FOR PHILLIPS RECESSED HEAD SCREWS

SIZES: Point Nos. 1—2—3—4.

STYLES: For all makes of electric, air and spiral drivers.

FOR SLOTTED HEAD SCREWS

SIZES. #4 to #20.

STYLES: For all makes of electric, air and spiral drivers.

FOR CLUTCH HEAD SCREWS

SIZES: 3/32" to 5/16" Clutch sizes.

STYLES: For most makes of electric, air and spiral drivers.

GRADES: All Apex Power Bits are made of a special grade of shock resisting steel, hardened and tempered to give maximum toughness and resistance to wear.

HAND DRIVERS

FOR PHILLIPS SCREWS

SIZES: Point Nos. 1—2—3—4.

GRADES: Carbon Steel Blades.
General Purpose—Nickel-Moly Steel Blades.
Super — Shock resisting Tool Steel Blades for hardened and self-tapping screws.

HANDLES: Hard Maple.
Superloid — Shock-proof and Break-proof.

FOR CLUTCH HEAD SCREWS

SIZES: 3/32" to 5/16" Clutch sizes.

GRADES: Super-Shock resisting Tool steel blades.

HANDLES: Hard Maple.
Superloid — Shock-proof and Break-proof.

E & TOOL COMPANY

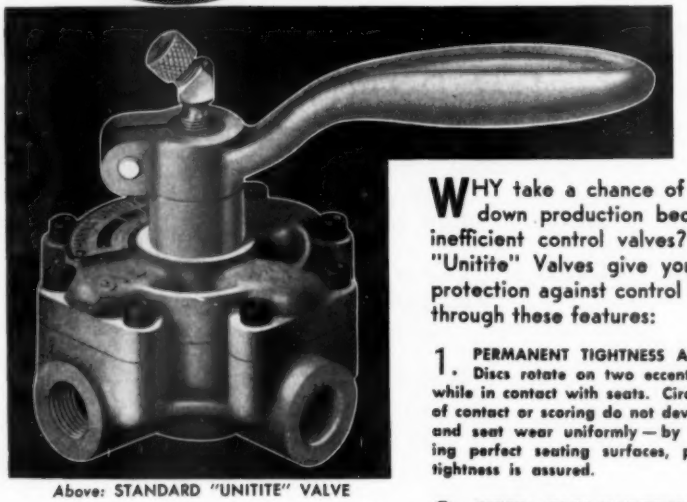
DAYTON, OHIO, U. S. A.

BARBER-COLMAN TOOL APPLICATIONS

Four applications of Barber-Colman tools, which are representative of a series of twenty different types of tools, will be featured in Booth 100. Each tool exhibited will be in relation to some particular application taken from the field wherein it is in actual operation. A photograph of the actual operation, the tool and the part it produces will be shown.

One application is the operation of hobbing six taper splines on the hub of an automobile part made of high-carbon molybdenum steel, on a Type T Hobbing Machine. The part is accurately hobbed in a single operation. Noteworthy is the increased use of tapered splines for parts of this kind.

HERE'S 3 WAY PROTECTION against Control Trouble!



Above: STANDARD "UNITITE" VALVE

COLUMN MOUNT "UNITITE" VALVE

MANIFOLD "UNITITE" VALVE

HANNA SPEED REGULATING VALVE

WHY take a chance of slowing down production because of inefficient control valves? Hanna "Unitite" Valves give you 3-way protection against control trouble, through these features:

1. PERMANENT TIGHTNESS ASSURED — Discs rotate on two eccentric points while in contact with seats. Circular lines of contact or scoring do not develop; disc and seat wear uniformly — by maintaining perfect seating surfaces, permanent tightness is assured.

2. QUICK — EASY MAINTENANCE — The valve disc seats on the valve bonnet, and both may be reground without removing valve body from the pipe line or disturbing pipe connections.

3. PACKLESS CONSTRUCTION — Hanna "Unitite" Valves are of the packless type with a simple but effective arrangement for the lubrication of moving parts.

Write for information on the complete Hanna Valve Line.

HANNA ENGINEERING WORKS
1765 Elston Avenue • Chicago, Illinois

Hanna Cylinders
These modern, precision-built cylinders are available for handling air, oil or water in a complete range of styles and sizes, at working pressures up to 1500 lbs. Every model offers low first cost, and proved economy of operation. Send for literature.

Hanna "Unitite" Valves

AMPCO METAL PARTS USED FOR AIRCRAFT

Many parts of Ampco Metal now used in the machine tool and aircraft industries, will be displayed by Ampco Metal. Inc., in Booth 357. The metal is used for applications where highly stressed parts need the wear-resistance and ability to withstand fatigue and failure which this metal gives. Displayed will be examples of the company's work in connection with many National Defense contracts now in active production.

SCHAUER NEW SPEED FINISHING LATHES

The exhibit of the Schauer Machine Company, Booth 380, features the latest addition to this company's line of finishing lathes. This is said to be a new, powerful speed lathe, with infinitely variable spindle speeds, and is especially designed for lapping. It is said to solve the problem of precise lapping of gauges at extremely low speeds—as low as 20 r.p.m.—with plenty of power.

NEW MODEL DIAL INDICATORS BY STARRETT

Some new models of Dial Indicators will be shown for the first time in the exhibit of The L. S. Starrett Company Booth 157. The exhibit will also include a representative display of Starrett tools, dial indicators, hack saws, band saws and steel tapes.

McCROSKY
COST CUTTING TOOLS

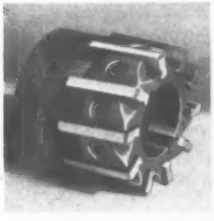
Engineered to the job

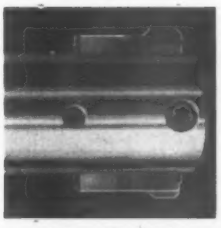
McCROSKY BLADE - LOCKING Devices are readily adapted to special - purpose inserted - blade tools. Shown here are representative examples of specially engineered tools designed and made by McCrosky. Most of them cut costs by combining cuts. Let McCrosky engineers help you with your tooling problems.

● For a complete display of McCrosky standard and special inserted-blade tools, and of McCrosky tool-holding devices that save time, visit the McCrosky Booth No. 146 at the 1941 ASTE Exhibition.

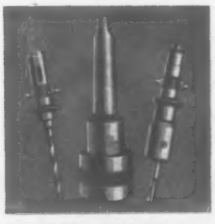
● For your reference file send for McCrosky Bulletins on the standard McCrosky Tools shown below. The bulletins will also show special tools engineered to definite jobs.

Mc Crosky Tool Corporation, Meadville, Pa.


SUPER Adjustable Reamers


Adjustable Block Boring Bars

JACK-LOCK Milling Cutters


WIZARD Quick-Change Chucks

McCrosky Turret Tool Posts

ALLIS-CHALMERS OPERATES "WELD-O-TRON"

The Allis-Chalmers Manufacturing Company will exhibit in Booth 145 their electric motors, "Texrope" Drives, Speed Changers, motor control and small centrifugal pumps. In Booth 391 they will demonstrate the electronic "Weld-O-Tron" arc welder for thin metals.

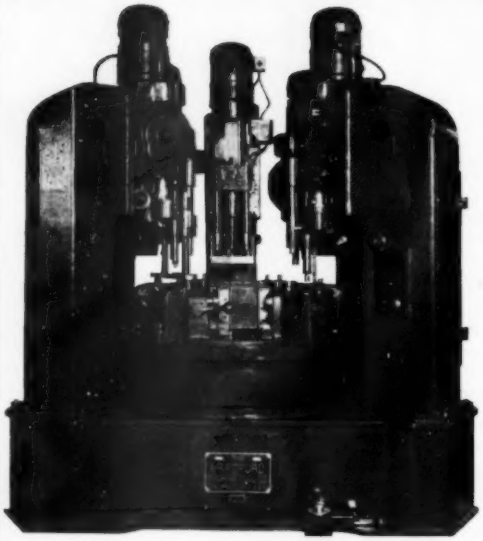
A Weld-O-Tron operator will weld airplane tubing and sheet metals of very thin gauges—including stainless steel, nickel, Monel, Inconel, and other metals. This welder is said to have a constant current characteristic which makes the arc easy to start, easy to hold, and produces an optimum heat condition at the weld. The same characteristics are said to be obtained from minimum to maximum current settings.

TO MEET TODAY'S CRY FOR INCREASED PRODUCTION

You must have machines that will perform many operations at once, or in quick succession

BRADFORD DRILLING AND TAPPING UNITS

Make increased production possible



A Bradford 5-Unit Machine for drilling, spotfacing, reaming, and tapping automobile transmission cases, performing 1440 operations per hour.

Can't you imagine the increased production and lowered per piece cost that would result from operating a machine that performs drilling, reaming, tapping, hollowmilling, spotfacing simultaneously or in sequence?

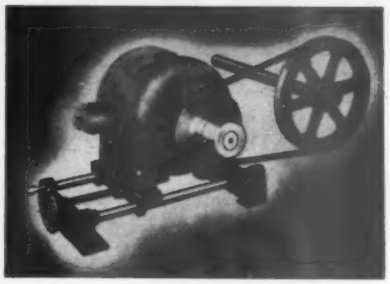
Put your problem up to our engineers! Simply send us the blue prints of the parts on which you want faster production — we'll design the equipment that will bring economies and maximum efficiency in your production.

We also manufacture the Bradford Geared Head Engine Lathe

THE BRADFORD MACHINE TOOL CO.

CINCINNATI, OHIO

PRECISION TOOLS SINCE 1840



REEVES CONTROL FOR CONSTANT SPEED MOTORS

A unit which provides variable speed control on any constant speed motor up to one and a half HP will be displayed by the Reeves Pulley Company in Booth 122. This unit consists of a disc assembly and an adjustable motor base. The disc assembly consists of two cone shaped discs with a self adjusting tension spring. This assembly is mounted on the motor shaft and connected with a V-belt to the sheave pulley on the driven shaft.

By means of an adjusting handwheel the motor is moved forward and back. When nearest the driven sheave, the V-belt runs over the largest diameter of the discs and maximum speed is secured. As the motor is moved away the discs part and the belt runs over a continually smaller diameter, thus gradually reducing the speed.

RANGE OF NEW CARBOLOY TOOLS CAN BE INCREASED

The exhibit of the Carboloy Company in Booth 124 will emphasize how the range of these tools can be further increased through grinding them to suit individual requirements, rather than waiting for deliveries of special tools. Actual grinding demonstrations will be given. The ease with which the standard tools can be ground and the time saved will be shown by grinders in operation. The tools will be those in regular production by the company, and will be brought from the plant each day and returned for stocking after grinding according to approved methods. For these demonstrations pedestal grinders with silicon carbide and diamond wheels, and chip-breaker grinders with diamond wheels will be used.

ABRASIVES

...Essential to Metal-Working Production

The urge for faster production demanded by the defense industries has given added importance to grinding as a means of working metal parts. The efficient performance of the abrasive grinding wheel, therefore, is of serious concern to production executives responsible for grinding procedures. The wide variety of size, shape and grain and grade combinations of Abrasive Company Grinding Wheels permit the selection of the most efficient wheels for your grinding operations, whether it be a question of fast stock removal for rough snagging in foundries and steel mills or the finest precision grinding on metal-working production lines. • Abrasive Company Engineering Service is available for the solution of grinding problems throughout industry and we welcome the inquiries of interested production executives.

AMERICAN DEFENSE COMES FIRST

ABRASIVE COMPANY

Division of Simonds Saw and Steel Company, Tacony and Fraley Sts., Philadelphia, Pa.

ELECTRIC FURNACE PLANT: ARVIDA, QUEBEC, CANADA • CHICAGO BRANCH: 127 S. GREEN STREET

DISTRIBUTORS IN ALL PRINCIPAL CITIES

DE WALT HANDY WOODWORKING MACHINE

A handy woodworking machine which is said to be finding a place as standard equipment in industrial plants will be featured by the De Walt Products Corporation in Booth 355B. Of remarkably flexible construction, the machine arm can be rotated right or left 360 degrees around the column, making it possible for the operator to make any miter cut. The motor can turn 360 degrees vertically inside its yoke, enabling the operator to quickly set up for any angle cuts as well as for shaping operations. The complete motor unit can swivel 360 degrees horizontally right or left.

What is "Production Peace-of-Mind" Worth to You?

Two of today's major production worries: "How high can we step it up" and "Can we hold the pace"—they're problems that A-L Tool Steels have been solving for almost a century. Solving them, first, by top-notch performance; second, by dependable uniformity, order after order.

We can add to your peace-of-mind in other ways, too. With a highly effective supply set-up, for example. And with a Mill Service organization capable of saving you lots of needless steps. ●When you're tooling up, in other words, *put it up to A-L!*

ALLEGHENY LUDLUM STEEL CORPORATION
GENERAL OFFICES: PITTSBURGH, PA.

★ ★ ★ AL ALLEGHENY LUDLUM FINE TOOL STEELS SINCE 1854 ★ ★ ★

Write for a copy of our new "Handbook of Special Steels." Send the coupon to Allegheny Ludlum Steel Corporation, Tool Steel Division, Watervliet, New York.

Name .....

Street .....

City ..... State T-114

INTRODUCTION OF NEW AMES LINE OF INDICATORS

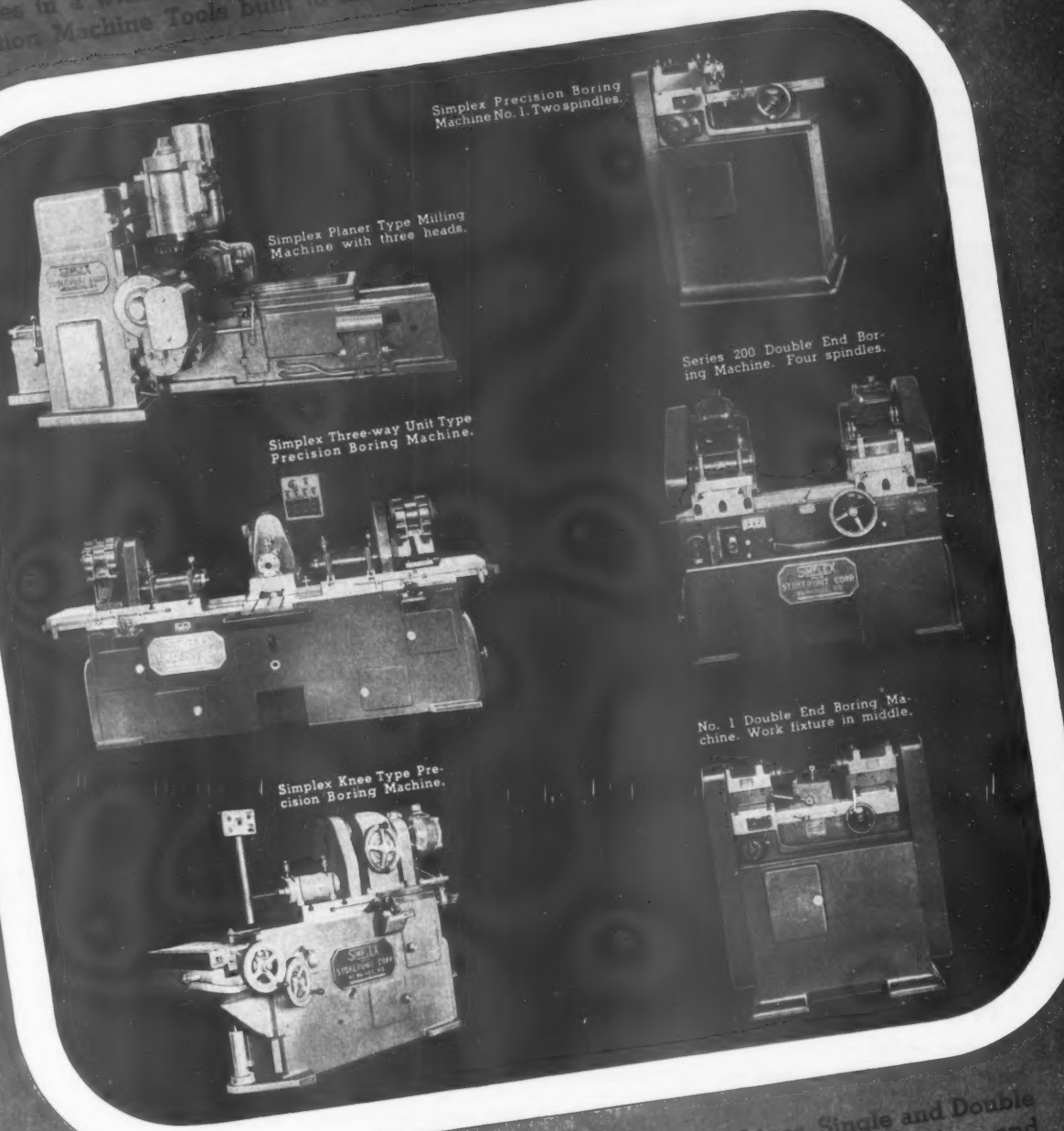
Of unusual interest in the exhibit of the B. C. Ames Company in Booth 367 will be the introduction of a new line of dial indicators and gauges. The new models will be known as Ames Hundred Series Indicators and are made to conform with American Gauge Design Committee specifications. Over fifty new models will be on display.

An opportunity to observe how friction and tension characteristics of indicator movements may be measured will be provided through the use of an extremely sensitive balance. Comparative tests of plain and jewel bearing movements may also be observed at these demonstrations.

SUPER TOOL SHOWS NEW ATTACHMENT FOR SPECIAL GRINDING

A new attachment for the accurate grinding of squares, hexagons, and other figures, as well as the grinding of radial relief, will be the feature of the Super Tool Company exhibit in Booth 133. This attachment is readily adjustable to required diameters, and its flexibility permits its use on a wide variety of work. Any number of equal flat surfaces can be accurately produced, and the relief grinding is adjustable to requirements. This attachment was developed in the Super Tool Company shops for use on their own work and its demonstration should prove of interest to tool makers.

SIMPLEX Precision-built Machine Tools include 25 types and sizes of Boring Machines in both mechanical and hydraulic feeds. Planer Type Milling Machines in a wide range of models, and Special Production Machine Tools built to meet buyers' needs.



Simplex Precision Boring Machine No. 1. Two spindles.

Simplex Planer Type Milling Machine with three heads.

Series 200 Double End Boring Machine. Four spindles.

Simplex Three-way Unit Type Precision Boring Machine.

No. 1 Double End Boring Machine. Work fixture in middle.

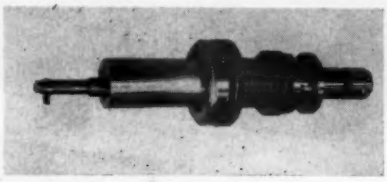
Simplex Knee Type Precision Boring Machine.

UNIT Type Boring Machines, Single and Double End, Three or Four Way; also Knee Type and Angular Type Machines make Simplex Boring fast, efficient, and economical. Let us look over with you your precision boring, heavy milling, and special machining problems generally.

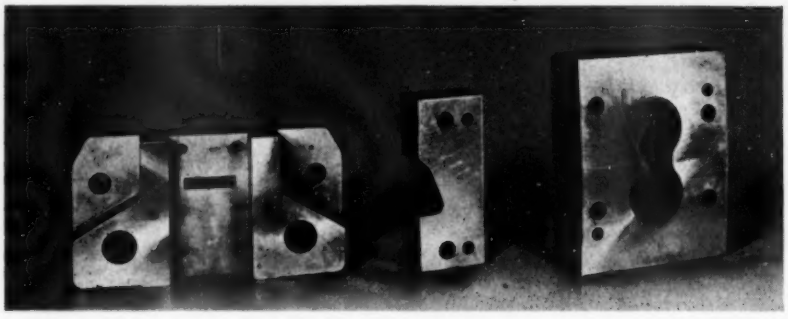
STOKERUNIT CORPORATION

MILWAUKEE, WISCONSIN

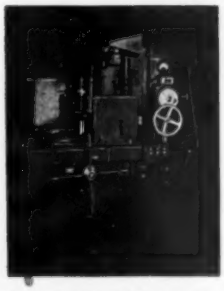
SCULLY-JONES SPECIAL TOOLS



Special tools for recessing, grooving, undercutting, necking and facing will be featured in the exhibit of Scully-Jones and Company, Booth 142. These tools are suitable for use on automatic screw machines, turret lathes, drill presses, and horizontal boring mills. In these automatic tools a ball bearing stop collar strikes against the work, stopping the forward movement, while the rear portion of the tool continues in motion, feeding the tool bit into the work. Adjustment is provided for the tool bit after regrinding, for location of the groove, for correct depth setting in controlling the diameter of the recess and also for length of recess of groove in tools where the bit moves forward after reaching the maximum diameter of its cut.



TOOL MAKERS
DIE MAKERS . . Jobs like these require only a few minutes apiece on the No. 11 Blanchard Surface Grinder.



BLANCHARD NO. 11

"Excellent — Fast — Accurate" says this customer after more than a year of tool room use.

The cylinder wheel covers the entire surface at every revolution of the work. High work speed and ample supply of coolant eliminate any danger of heating the work. The Blanchard is a heavy and rigid machine, permitting the economical use of free, soft cutting wheels.

Savings in time and money, and opportunities to release men from grinding to other work, make it logical to install Blanchard Grinders in every tool and die shop.

No Bottlenecks on Tool Room Grinding with a
BLANCHARD

THE BLANCHARD MACHINE COMPANY
64 STATE STREET, CAMBRIDGE, MASSACHUSETTS

ABRASIVE FEATURES NEW IMPROVED GRINDING WHEEL

The Abrasive Company in Booth 113 will feature an improved grinding wheel designed specifically for use on Brown and Sharpe surface grinding machines. The wheel is an SB-Borolin precision unit measuring seven by one-half inches in diameter and width, with a one and one-quarter inch hole bushed with a hard wear-resisting material. The bore is finished for a tight fit on the wheel spindle. The wheel is also ground on the sides and is available in a range of grain and grade specifications for use on all types of alloy and carbon steels.

HANNA SHOWS NEW PORTABLE HYLDAULIC RIVETING MACHINE

The exhibit of the Hanna Engineering Works in Booth 234, will feature their new Portable Hydraulic Riveter. This riveter embodies several developments new to this type of equipment and will be demonstrated driving rivets. Portable and Stationary Pneumatic Riveters will also be featured by operating exhibits.

WESTERN HAS NEW MULTI-MOTOR MOUNTS DISPLAYED

The Western Manufacturing Company will exhibit in Booth 251 multi-motor mounts for use with motors ranging from 1 to 10 h.p. The units are available for shaper, boring mills, vertical mills, lathes, drills, and screw machines.

-to meet the requirements of industry

Send for FCC Products Catalog and Composite Steel Die Section Engineering Data Folder.

FORGINGS:

Rings . . . Discs . . . Blocks . . . Bars . . . Shafts . . . Spindles . . . Hubs . . . Shapes . . . Alloy and Tool Steel.

CASTINGS:

FCC A. H. Tool Steel, cast to shape . . . FCC No. 66 Tool Steel, cast to shape . . . FCC No. 55 Tool Steel, cast to shape . . . FCC O. H. Tool Steel, cast to shape . . . FCC Flamhard . . . FCC Roloy . . . Nitricastiron Centrifugally cast.

COMPOSITE STEEL DIE SECTIONS:

Water Hardening . . . Oil Hardening . . . Carbon Vanadium.

We're equipped to handle rough machining heat treating, and shape burning.

QUALITY FCC SERVICE

THE FORGING and CASTING CORPORATION

FERNDALE (DETROIT) MICHIGAN

PIONEER ENGINEERING WILL DISPLAY NEW COOLANT PUMP

The Pioneer Engineering & Manufacturing Company will exhibit in Booth 239 a new Coolant Pump, Model VBA. This new pump is distinguished by its compactness, which renders possible the placement of a coolant pump under conditions beyond the range of other models. This new model is said to be capable of functioning efficiently with an extremely low water level, particularly in shallow places—out of the reach of most pumps. Positive priming is assured even with the reduced height of coolant in the supply tank.

New!

A 24" Throat, Automatic Rivet-Setter For AIRCRAFT ASSEMBLIES . . .

ON DISPLAY
In Booth 114 at the Machine Tool Show in Detroit

HERE IT IS . . . the Chicago Rivet's New Model 140 . . . the first of a complete line of precision, heavy-duty, automatic riveters, specially tooled for high-speed, aircraft assemblies. Sets up to 2400 3/16" solid aluminum aircraft rivets per hour. *That's production!* Rugged construction and advanced design assure a perfect clinch with a single riveting blow.

Write for Chicago's New Aircraft Riveter Catalog, illustrating and describing Model 140 and other Chicago automatic bench and floor type units in detail. All are designed and tooled especially for aircraft production. All are equipped with SAFE, non-repeating type clutch. Remote electric foot button control available.

If your need is urgent, send blue prints or sample assembly for specific recommendations. Whatever your riveting problem, Chicago can solve it with the *right* machine and tooling.

Equipped with Automatic Rotary Type Hopper

Tubular and Split Rivets—Aircraft Rivets

Chicago RIVET & MACHINE CO.

1853 South 54th Ave. (Cicero P. O.) Chicago, Illinois

Automatic and Manual Rivet-Setters for 1 to 4 Rivets at a Stroke

JOHNSON NEW HI-SPEED HEAT TREATING FURNACE

On display by the Johnson Gas Appliance Company in Booth 321 will be the company's new line of hi-speed heat treating furnaces in operation. Featured will be the No. 130 which by actual time tests reached a temperature of 2300° in 22 minutes. Advanced engineering principles have been employed which are said to enable these furnaces to reach maximum temperatures in record breaking time, yet with a consumption of only about half the amount of gas required by ordinary heat treating furnaces.

MINSTER HAS 75 TON DOUBLE CRANK PRESS

The Minster Machine Company will display in Booth 228, a straight side double crank press. This press is rated at seventy-five tons capacity. It is fifty-four inches between uprights and is said to incorporate all of the latest features for long equipment life, flexibility, and ease of operation, having an air operated synchronizing multiple disc friction clutch and brake, seven inch barrel type motorized slide adjustment and totally enclosed dip lubricated gearing, and bronze faced slide ways.

★ ★ ★ When any man adds a single hour to the production life of a tool, or makes that tool do better work, that man makes a worthwhile contribution to American ideals and to America's future.

Every man—whether he admits it or not—takes pride in doing his work well. Within him is the desire to *give* to the fullest extent of his ability and training.

Because this trait is universal, a dual responsibility is placed on Management: (1) to furnish men with suitable tools, and (2) to teach them the proper use of these tools.

Responsibility for the training of men in the use of tools must begin with those who make the tools.

KOEBEL DIAMOND TOOL CO.

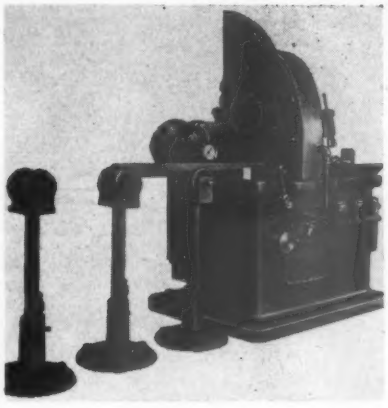
Diamonds for All Industrial Purposes—Koebelite Diamond Tools

9350 GRINNELL **DETROIT, MICHIGAN**

Write for booklet "For (Grinder) Men Only". It will help prolong the life of your diamond tools.

UNUSUALLY COMPACT PRINTING MACHINE DISPLAYED BY BRUNING

A new printing machine, model 55, will be featured by the Charles Bruning Company, in Booth 132. This machine is said to be the most compact printer of its capacity on the market, and measures thirty-two inches wide, sixty-two inches long, and forty-eight inches high. It prints ink tracings at from twelve to fifteen feet per minute, operating with either cut sheets or roll stock. A full view speed indicator placed at the center of the front makes the speed of the machine readily visible to the operator at all times.



The *NEW* Model A600 Tool and Cutter Grinder

"What will it sharpen with standard equipment?" See the answer at our booths Number 405 and 406 at the ASTE Show in Detroit. But if you can't attend we'll tell you. You can sharpen straight, spiral or angular milling cutters, face or form milling cutters—all up to 6¼ inches in diameter; straight, spiral, taper and helical reamers; and slitting saws up to 24 inches in diameter. Note the machine's many niceties: the universal head stock indexed in degrees; the upper table and motor head indexed to swivel 360°; the end of the table indexed for taper per foot, and the end stops.

Ask us for Bulletin TCG41-3TE for full description

K. O. LEE COMPANY

ABERDEEN, SOUTH DAKOTA • U. S. A.

CAMPBELL WILL SHOW "CUTAMATIC" WET ABRASIVE

The new "Cutamatic" Wet Abrasive Cut-Off Machine will be featured in the Andrew C. Campbell Booth No. 205. This machine maintains an oscillating movement across the surface of the cut to keep arc of contact practically uniform from start to finish. As a result there is no heat problem at the center of a cut in passing a wheel through a six inch solid bar. Burning, surface hardening, and glazing are said to be eliminated and there is little or no burr on the edges of the cut.

Also displayed will be the No. 250 Nibbling Machine. This Machine will cut up to ¼" mild steel and 3/16" stainless steel up to seventy inch widths.

FAUVER HYDRAULIC HOSE ASSEMBLIES FOR MACHINE TOOLS

The J. N. Fauver Company, Booth 169 will exhibit a wide line of specialties for lubrication, filtration, and hydraulic applications. Featured will be Fauver hydraulic hose assemblies in a wide range of volume, temperature, and oil-resisting requirements. These units are available in any length for hydraulic applications involving excessive flexing and rough usage and for conveying lubricants, coolants, cutting oils, plastics and other fluids to adjustable or moving points on machine tools and other equipment.

Here's how I boosted their output 50%!

—THE ROTOR ANALYST

They were short of air. This foundry was thinking about adding more air tools to get *faster production.* Lucky they called me in. Here's what I found: Their two air compressors were overtaxed. Tools weren't turning at top efficiency. An additional compressor to provide the necessary air would have cost $2,622 and would have required space they didn't have.

This foundry was short of air. Rotor High-Cycle Tools increased piece output 50%.

Analysis. All signs pointed to high-cycle tools. A high-cycle m.g. set would cost about $937—64% less than a compressor. It could be installed on a wall bracket—out of the way. Maintenance would be less. Cost of high-cycle power would be one-fourth that of air. Delivery of high-cycle equipment could be made quicker.

Result. We installed Rotor High-Cycle Grinders. *Boosted their piece output 50%* with three less High-Cycle tools than Air tools. The same number of men now get fatter pay. Wheel life has been lengthened because speeds are more constant. Power costs are 75% less. Operation is quiet and clean.

Air or High-Cycle? . . . I'm unbiased. I'd be glad to make a similar study to improve *your* portable tool operations. No obligation, of course.

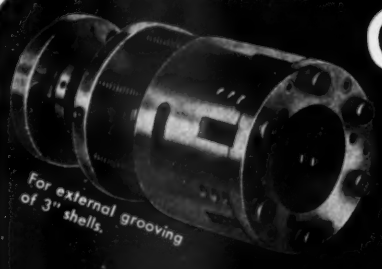
THE ROTOR ANALYST

SKILSAW COMPACT HALF INCH DRILL

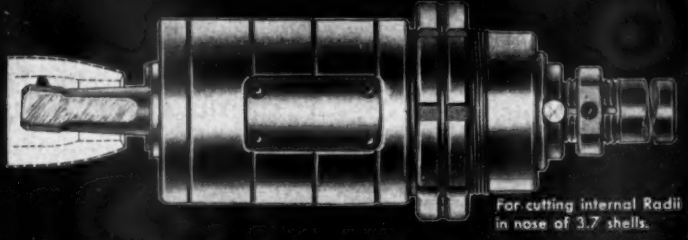
Featured by Skilsaw, Inc., in Booth 217 will be their new Model 80 one half inch drill with its compact modern streamlined construction and its advanced design. Also displayed will be four cut-out models of tools, allowing engineers to examine the design and manufacture.

For Defense!

GAIRING
Shell Tools



Gairing automatic expanding and retracting tools for producing duplicate parts have many advantages over those of conventional design. The cam actuated types illustrated here attain extreme accuracy to and from cutting position. Their design and production for unusual purposes are our particular Job. Try us!



The Gairing Tool Co., Detroit, Michigan
In Canada, Hi-Speed Tools Ltd., Galt, Ont.

SPECIALISTS IN FINE CUTTING TOOLS FOR 24 YEARS

EDUCATION—THEME FOR KOEBEL DIAMOND

"Teach the New Men" will be the keynote of the Koebel Diamond Tool Company exhibit in Booth 148. The exhibit will feature a display of the company's booklet "For (Grinder) Men Only", written in the employee's language with simple pictures illustrating the proper handling of diamond tools; and an industrial poster to be put up in factories, urging the workman to use greater care in the handling of all tools.

NEW DEVELOPMENT IN GEAR CHECKING BY MICHIGAN TOOL

It is expected that an entirely new development in gear checking will be ready for demonstration for the first time at the exhibit of the Michigan Tool Company in Booth 138. The latest type lead and involute checkers will also be featured, and the Michigan line of cutting tools will also be displayed.

K. O. LEE HAS COMPLETE TOOL SHARPENING MACHINE

A new model A-600 Tool and cutter grinder will be featured by K. O. Lee Company, in Booth 405. This is a complete tool sharpening machine, capable of sharpening straight, spiral, or angular milling cutters; face or form milling cutters; straight, spiral, taper and helical reamers; and slitting saws.

KNU-VISE SHOWS TOGGLE ACTION CLAMPING TOOLS

Toggle-action clamping tools will be displayed by Knu-Vise, Inc. in Booth 251. These clamps are designed for holding partial assemblies, sheet metal components, during such processing operations as drilling, riveting and welding.

Engineered for To-day's Increased Production

6-INCH JOINTER

This machine is made especially for pattern shops, building or maintenance work requiring jointing of uneven lumber. Eliminates hand planing to speed up important jobs. Cuts to ½" depth on material 6" wide. Has many exclusive features, such as front and rear blade guards; extensions to increase support of work to 60"; fence that eliminates dangerous gap over rear table. Equipped with New Departure Ball Bearings.

10-IN. TILTING ARBOR SAW

Pattern makers, maintenance men or carpenters will appreciate the features of the saw illustrated at the right. Heavy and massive for adequate support of large pieces — cuts to depth of 3⅜"; 17" from blade to fence with regular extension — 25" with special extension. Use standard motor — special motors not required — eliminates delays if motor fails. Built-in chute carries sawdust past working parts, assuring smooth operation.

13 x 36 INCH LATHE

For wood or metal turnings, this Lathe will handle many jobs to relieve more expensive equipment to speed up production.

This Lathe has many exclusive features, such as clutch in head; V and Flat way bed; hand wheel adjustments and a more comp'ete line of accessories. Head and tailstock and bed are heavy gray iron castings. New Departure Sealed Ball Bearings are mounted directly in headstock casting with indexing pulley between the bearings. The extra rigidity and accuracy of V and Flat ways make it adaptable for metal cutt'ng when thread cutting or automatic feeds are not required.

The Machines illustrated are exemplary of Duro Production Power Tools. Acknowledged as America's Finest and most complete Line of Power Driven Machinery, there is a size and type to fit every need. They are modern in design, precise in workmanship and built of the finest materials to give greater values. Duro Tools will be displayed at the A.S.T.E. Machine and Tool Progress Exhibition in Detroit. We invite you to visit Booth 120 for complete information and a catalog.

VISIT BOOTH 120 TO SEE DURO TOOLS

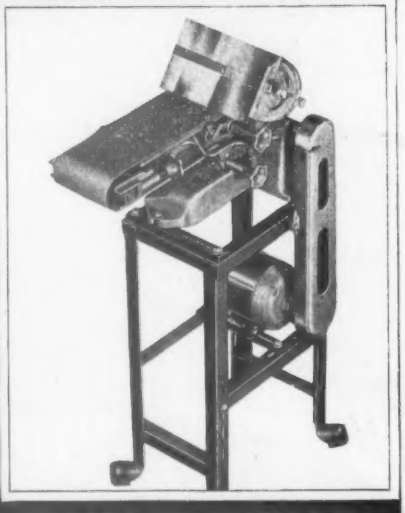
DURO

6-IN. BELT SANDER

For sanding wood or metal this machine will do work better and faster. Completely adjustable with carriage for vertical or horizontal use. Handles work up to 6" wide. Work table is 6" x 12½". Tilting table 6½" x 11". Mitre Gauge for compound angles.

30-IN. SCROLL SAW

An indispensable tool for every pattern shop. The only saw with balanced power and synchronized operating mechanism. Cuts to center of 60" panel, 1⅝" thick. Use for inside or outside cutting or with bench files for wood or metal.



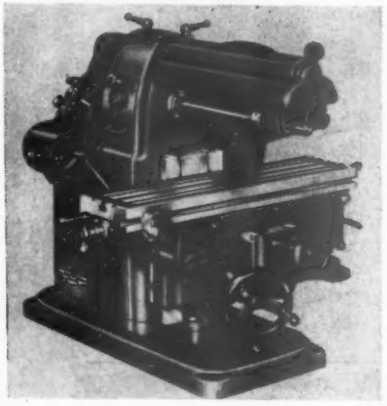
DURO METAL PRODUCTS CO. DEPT. PT-1, 2649 N. KILDARE AVE., CHICAGO, ILL.

BLANK & BUXTON VERTICAL MILL

The Blank & Buxton Machinery Company in Booth 159 will feature their 40-H Index High Speed Vertical Mill. This mill is especially designed for the tool, die and experimental shop for milling, boring and drilling. It has a capacity of one-eighth to five-eighth inches end mills in tool steel, and has six standard spindle speeds ranging from 180 to 2400 rpm with single speed motor.

JOHANSSON GAGE BLOCK DISPLAY

The Ford Motor Company will display various sets of Johansson Gage Blocks and accessories in Booth 276. Numerous demonstrations showing how the blocks and accessories may be applied will also be presented, including gage checking applications, screw thread checking, and other measurements.



ATLAS PRESS HAS BENCH MILLING MACHINE FEATURED

The Atlas Press Company, Booth 360, will exhibit their new Bench Milling Machine. This machine has a complete V-Belt Drive, quick-change countershaft (attached to machine), and a precision-ground table. The machine is available with hand-operated screw feed, rapid production lever feed, or the new "Change-O-Matic" for instant selection of reversible automatic longitudinal table feeds between 0.162 and 9.125 inches per minute.

HANNIFIN SHOWS HYDRAULIC AND PNEUMATIC CYLINDERS

The Hannifin Manufacturing Company exhibit in Booth 243 will show hydraulic and pneumatic cylinders, air control valves, and work holding fixtures. In the hydraulic cylinders, tie rods have been eliminated, and a rugged construction is used. These cylinders are bored and then honed, giving a straight, round, and smooth finish.

for GEAR PRODUCERS

Another Real Service from Gear Production Headquarters

In keeping with our aim of being of maximum service to gear producers in connection with their gear production problems, we are pleased to announce that a new "Tables" booklet is now ready for distribution.

Included in the 40 pages of useful data in this booklet are:

1. New and simpler hobbing machine change gear formulae and tables.
2. Formulae for checking gears by ball and pin methods.
3. Complete tables of decimal equivalents of fractions.
4. Hobbing speed tables.
5. Formula for checking hobbing time.
6. Descriptions of hob-checking equipment.

A limited number of copies of the new booklet (No. 266-41) are available without charge to gear production men. May we send you your copy? (In writing please give your company connection.)

And this is but *one* of many practical printed aids to gear producers provided by 'Gear Production Headquarters'. Also available are such reference and shop booklets as "Hobbing", "Better Gears", "Gear Finishing", "Gear Cutting Tools",—and our monthly bulletin "Production Highlights". (Are you on the mailing list?)

MICHIGAN TOOL COMPANY
7171 East McNichols Road Detroit, U. S. A.

BRUSH DEVELOPMENT

SURFACE ANALYZER

Displayed by the Brush Development Company in Booth 388 will be the Brush Surface Analyzer. This instrument provides an instantaneous and permanent chart record of surface irregularities of less than one-millionth of an inch; it is now in use in the shop laboratories of many of the large automotive, aircraft engine, machine and machine tool manufacturers.

EDWARD BLAKE

J-B TAP GRINDER

Featured by the Edward Blake Company in Booth 257 will be their new J-B Tap Grinder. This machine is small, inexpensive, self-contained, and complete with motor, diamond trueing device, and extension cord. All movable parts are protected as much as possible from dirt and grit. Being free from cams, it is said that no wear can affect its uniform performance from land to land.

STERLING TOOL

PORTABLE AIR-DRIVEN

SANDER

A completely portable air-driven sander will be displayed by the Sterling Tool Products Company in Booth 373. This sander is light-weight and is said to be convenient to use in all positions on wood, metal, or composition surfaces. The flexible sanding pad permits the sanding of curved as well as flat surfaces at 3000 strokes per minute with a 5/8" stroke. The sander uses 6.5 cubic feet of air per minute at sixty pounds pressure. There is a water connection for wet sanding.

CHICAGO METAL

OIL RESISTANT

FLEXIBLE HOSE

The Chicago Metal Hose Corporation will feature in Booth 249 their Avioflex and Cellu-lined oil resistant flexible hose. This new hose incorporates a multiple cellulose liner inside an oil resistant jacket, making the hose impervious to the action of oil; it was designed especially for the machine tool industry to afford a flexible connection for reciprocating heads and other applications involving constant motion and vibration.

. . . with Heavy Duty Air Cylinders by NOPAK

Mirror finish bore, straight, round and concentric, plus perfect piston fit, assures efficient use of air power.

For perfect control of air-powered equipment, specify NOPAK leakproof, wearproof, flat-disc operating valves.

Use them to replace antiquated methods, to release man-power for more productive work, to save time, cut handling costs, speed-up production lines. NOPAK Heavy Duty Cylinders enable you to make full use of low-cost air-power for the heavier tasks of pushing, pulling, lifting or lowering. They are fast, smooth and positive in action, economical to operate.

NOPAK Heavy Duty Air Cylinders are extremely rugged in construction. Cylinder flanges are welded to body, eliminating tie-rods. Cast steel heads are bolted directly to flanges. Extra large piston rods can be furnished in alloy steels where extra strength is needed.

The NOPAK Heavy Duty series is made in a full range of standard sizes up to 12" bore for air pressures up to 250 lbs. Our engineers will gladly submit recommendations based on your specifications. Write today!

GALLAND-HENNING MFG. CO.
2757 S. 31st St. Milwaukee, Wis.

Representatives in Principal Cities

NOPAK VALVES and CYLINDERS
DESIGNED for AIR or HYDRAULIC SERVICE

A 3314-J

Announcing the

DALZEN PRECISION THREAD GRINDER

A low cost modern machine for present day precision thread grinding needs.

PATENTS APPLIED FOR

See it at

BOOTH 131

MACHINE AND TOOL PROGRESS EXHIBITION

CONVENTION HALL—DETROIT

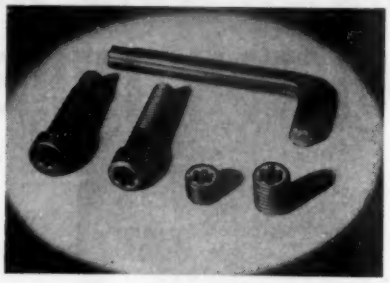
MARCH 25-29, 1941

Manufactured by

SNYDER TOOL & ENGINEERING COMPANY

3400 E. LAFAYETTE AVENUE **DETROIT, MICH.**

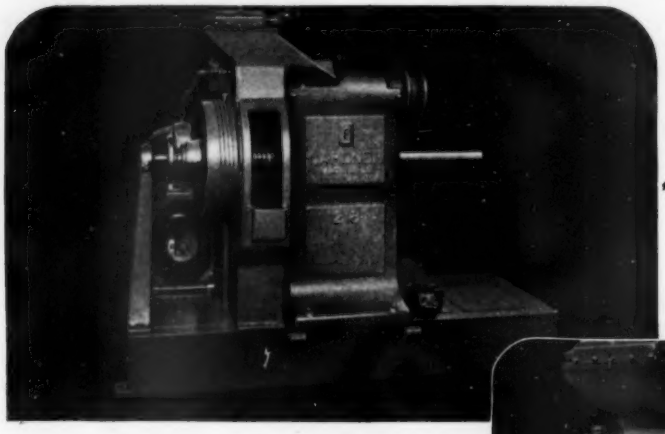
BRISTOL SOCKET SCREW PRODUCTS



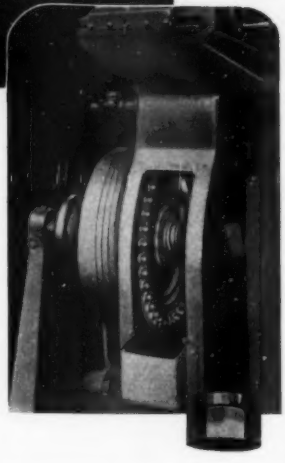
The Bristol Company in Booth 397 will feature Bristol Socket Screw Products, with the Multiple Spline socket. It will be demonstrated why the design of these screws is said to give faster, easier, stronger, and tighter set-up—and how this same design makes it practical to produce the small wire-size types.

PHYSICISTS RESEARCH SHOWS PROFILOMETER

Featured by the Physicists Research Company in Booth 112 will be the Profilometer. This shop instrument provides direct dial readings in true inch units of the roughness ratings now generally accepted. Special attention will also be directed to instruments built in lots of one or more for specific inspection purposes —or for individual research or production control jobs.



25 to 30 per minute!



Speed in grinding the bottom face of steel hexagon nuts!

MILLIONS of steel nuts are being used in the aircraft industry today. They must be accurately machined, and the No. 218-18" Gardner Grinder shown here, grinds the bottom face of these nuts to close tolerances, and at the rate of 25 to 30 PER MINUTE. The ground surface is held within .001 of parallelism with the top face, and within .001 of right angles with the reamed hole.

One end of this machine carries a rotary attachment and a work carrier, provided with a series of pins over which the nuts are placed for grinding. Both loading and unloading are accomplished manually.

IN AIRCRAFT PLANTS, OR IN SHOPS LIKE YOURS, GARDNER GRINDERS REDUCE FLAT SURFACING COSTS THROUGH *SPEED* IN PRODUCTION AND THROUGH *ACCURACY!*

Write for 24-page booklet—"Modern Methods of Gardner-Grinding!"

GARDNER-GRIND YOUR *Flat* SURFACES

GARDNER MACHINE COMPANY

442 East Gardner Street · · · · Beloit, Wisconsin, U.S.A.

INDEPENDENT PNEUMATIC PORTABLE ELECTRIC TOOLS

The Independent Pneumatic Tool Company in Booth 273 will display its complete line of Thor portable electric tools. Featured will be the company's new Pix-up Finder and Adjusto-Tray. These devices sort, pick up, and hold screws for driving, thus eliminating much handling by hand in screw driving assembly operations. Demonstrations, reproducing as nearly as possible actual shop conditions, will be held continuously.

LOW MELTING ALLOYS SHOWN BY CURTIS DESIGNING

The exhibit of the Curtis Industrial Designing Engineers in Booth 369 will feature applications of three low-temperature melting alloys. These alloys (Cerromatrix, Cerrobase and Cerrobend) are useful in reducing die construction cost and saving try-out time (TOOL ENGINEER, December, 1940) when used in trim racks and body fixtures.

A REMINDER!
The floor plan on page 65 will help you locate these highlights.

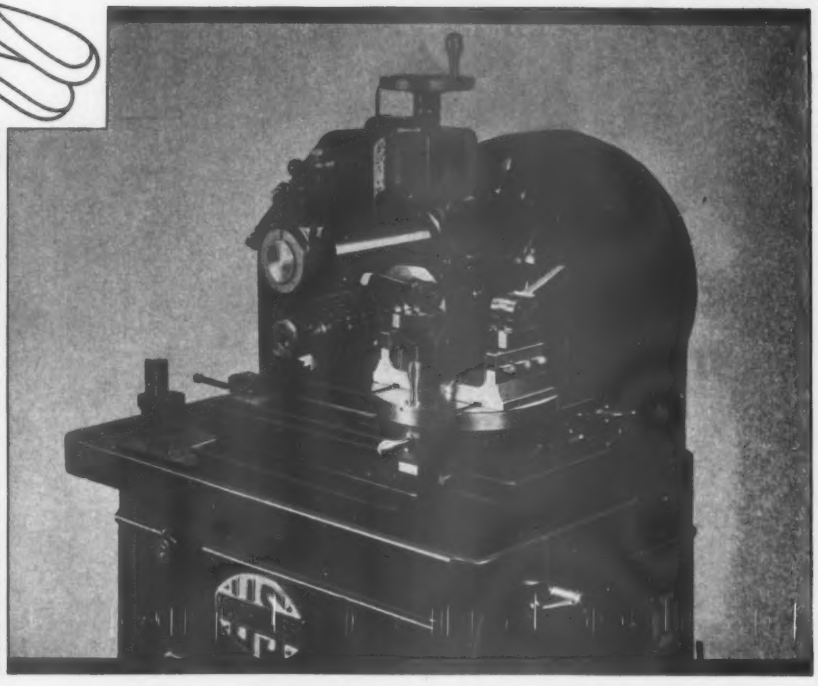
WINGS to Production of Aircraft Parts

AIRCRAFT PARTS

whose production can be accelerated on the

U. S. Multi-Miller

Engine Parts — Exhaust
Supports — Carbureter
Parts — Fuel Pump
Parts — Turnbuckle
Forks — Rocker Arms
Turnbuckle Eyes
Rod End Clevis
Propeller Contacts
Rod End Bearings, Etc.



Here is a milling machine designed to meet the expanding requirements of the aircraft industry—fully automatic in operation—precision built to turn out precision work—low change-over time.

Multi-Miller versatility is illustrated by the variety of out-of-the-ordinary applications, such as cutting off, spur gear cutting, contour milling, grinding, step milling, rotary milling and continuous milling, performed on these machines, in addition to conventional milling operations. Then, too, the Multi-Miller can be used for hand milling as well as for these automatic operations.

An example of Multi-Miller production of an aircraft part is the tough steel (SAE 2330) turnbuckle fork illustrated above. A 180° index table holding two fixtures enables the operator to load during the cutting cycle. Production is 125 per hour.

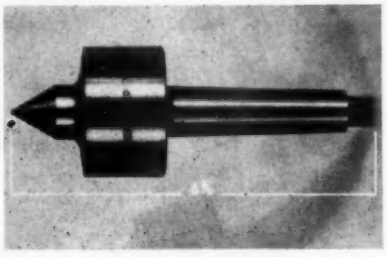
Send for Bulletin T-40 for full details.

PRODUCTS

U.S. TOOL COMPANY, INC.
AMPERE, (EAST ORANGE,) N. J., U.S.A.

MAKERS OF
U. S. MULTI-MILLERS
U. S. MULTI-SLIDE MACHINES
U. S. AUTOMATIC PRESSROOM EQUIPMENT—U. S. COMPOUND WHEEL TRUING ATTACHMENT
U. S. DIE SETS

READY TOOL HIGH SPEED CENTERS



On display by the Ready Tool Company in Booth 160 will be a variety of types of centers. Of special interest is a ball bearing center made with a butt welded high speed steel point, which is said to give five to eight times the life of those made with tool steel points.

CARBORUNDUM ABRASIVE PRODUCTS

The Carborundum Company in Booth 203 will display its complete line of abrasive products including tool room wheels, diamond wheels, "Green-Grit" wheels, ultra finish wheels, superfinish stones, cutting-off wheels and cylinder hones and sticks. Cloth for metal finishing in both rolls and sheets will also be included.

If you use stampings, you should learn all about this machine

It is drastically DIFFERENT. That's why Dieing Machine users are able to report: "Saved its cost first 6 months." — "Already turning out 7 jobs; putting more on it; saving over $200 weekly." — "Tremendous savings even running single-station dies." . . . . Dieing Machine performance is the new Modern Standard — saving 60% to 90%. Outstanding choice for innumerable defense items, where top production must be combined with product accuracy to .0002". Request complete data.

THE HENRY & WRIGHT MFG. CO.
Hartford, Conn.

8 operations performed at every stroke produce 4,800 completed shells per hour from .050" steel with 1⅜" draw.

A variety of machine gun belt links are produced complete per stroke at rates as high as 125 completed links per minute.

HENRY & WRIGHT DIEING MACHINES

CATSKILL SHOWS CUT-OFF MACHINE

The Catskill Metal Works will exhibit in Booth 380 their Model W Abrasive Cut-Off Machine. This machine is of the wet type, and tubing to three inch in diameter and solids to two inches can be cut accurately, leaving a smooth surface. It is said to be especially suitable for high production cutting of the high alloyed hard steels, plastics and ceramics.

MIDWAY VERTICAL MILLING MACHINE

The Midway Machine Company in Booth 300 will feature their improved Vertical Milling Machine. This model is similar in design to the other machines built by the company, the main difference being that it has a two-speed motor and controller. The new machine is not equipped with a center idler pulley, because the two-speed feature eliminates the necessity for this pulley.

The two-speed machine is intended for applications where rapid speed changes are desired. It is provided with a constant-torque, 575 and 1140 rpm, one HP, three-phase, ball-bearing motor with a drum type controller. The speed range of the machine itself equipped with this motor is from 130 to 4400 rpm, fourteen different spindle speeds being available.

The speed range of a Millmaster model with single speed motor and center idler pulley is 70 to 10,000 rpm, with 44 separate speeds.

New

Automatic MICRO SIZE Control WITH MICROMATIC HYDROHONER

Visit Booth 108 AT 1941 A.S.T.E. MACHINE & TOOL PROGRESS EXPOSITION

The Automatic Micr-O-Size Control Unit generates accurate sizing in high production, uniformly within limits from .0002" to .0005", reducing tolerance range and number of selective fits.

It offers increased production through simplified practice. Write for Bulletin A.R.-60.

MICROMATIC HONE CORPORATION

1345 East Milwaukee Ave.
DETROIT, MICHIGAN

GEORGE SCHERR DISPLAYS COMPARITOL

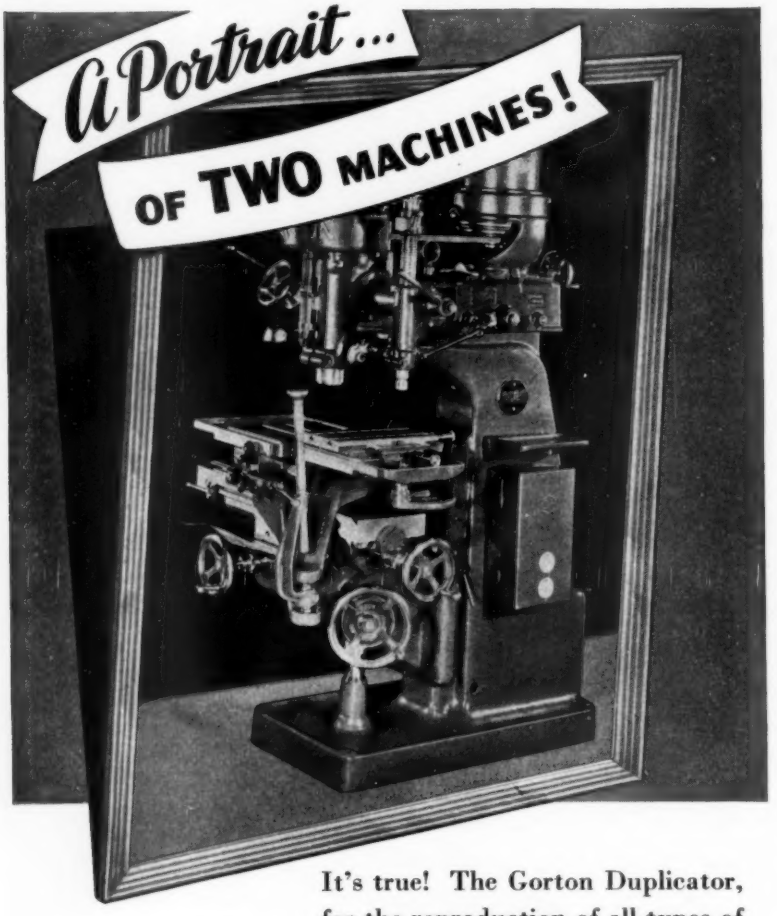
Featured in the George Scherr Company exhibit, Booth 241, will be the new Comparitol, a precision measuring instrument developed to help speed up inspection in metal-working plants. The Comparitol works on a patented knife-edge principle. The mechanism consists of two moving parts, the vertical spindle which carries the contact feeler point and a horizontal beam carrying the indicating hand. A stationary knife-edge supports the horizontal beam and a second knife-edge contacts the horizontal beam on the upper side.

The Comparitol may be used to inspect and check mass produced parts for interchangeable manufacture, shop gauges and other parts. This instrument is said to eliminate uncertainties resulting from varying skill of operator.

UNIVERTICAL END MILLER

The Univertical Machine Company will display in Booth 390 their high speed end milling machine. This machine has a swivel head graduated to a range of 90 degrees right or left of the vertical, which is said to permit exacting precision work and intricate milling on a broad scale. It is powered by a heavy duty ¼ HP motor and has a four speed range from 850 to 3400 rpm.

The table has cross travel of 17" and backward-forward range of 7"; all table movements are graduated to .001". There are two T slots in table.



It's true! The Gorton Duplicator, for the reproduction of all types of dies and molds, is in reality two machines. The removal of the duplicator table—a moment's work—converts the Duplicator into a high speed vertical milling machine for the tool room or for light production work.

For full information write today for Bulletin 1319-B.

GORTON

GEORGE GORTON MACHINE CO.

1322 RACINE STREET, RACINE, WISCONSIN, U. S. A.

HELLER BROTHERS DISPLAY FILES

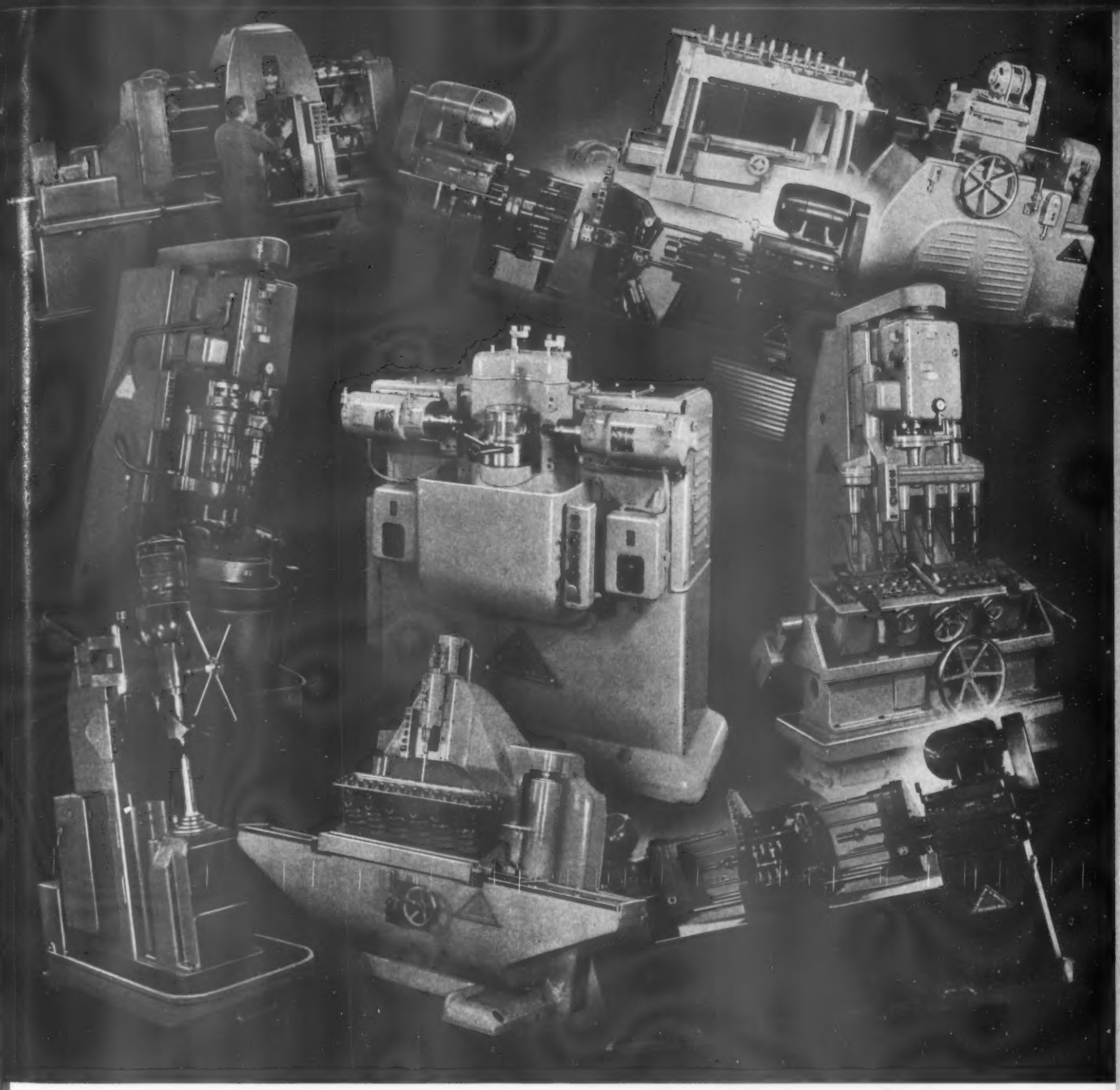
Heller Brothers Company display in Booth 399 will include color panels which show the Vixen, Nucut, and Swiss Pattern files.

There will be a complete display of files, hammers, and tools included as well as a panel showing the part played by Heller Brothers in the defense program.

OAKITE METAL CLEANING

How several recently developed materials and methods are effectively helping industry speed-up production cleaning and increase output on both national defense and normal production, will be featured by Oakite Products in Booth 354.

First of these developments is a new speedy method of cleaning aluminum before spot-welding that is said to make possible more welds before electrodes must be cleaned, and to provide greater safety to both personnel and parts. Among other developments to be shown which are of particular interest to aircraft and other plants fabricating aluminum or its alloys are safe materials and methods for cleaning heat-treated aluminum parts; cleaning before anodizing, or similar protective surface treatment; and cleaning before brazing.



March of Le Maire Hydraulic Machines

Save Time and Money

Investigate What Le Maire
Has To Offer You — TODAY

LE MAIRE PRECISION PRODUCTS

Visit Booth No. 365 at the
A. S. T. E. SHOW

LE MAIRE TOOL & MANUFACTURING COMPANY

2655 SOUTH TELEGRAPH ROAD - DEARBORN, MICHIGAN

HAMILTON AUTO-SHIFT TABLES

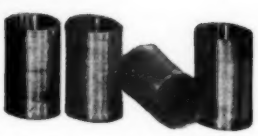
The Hamilton Manufacturing Company will display in Booth 141 their Auto-Shift Table. This drawing table is said to be scientifically designed for use in the drafting room with comfort to the user. The tables are used in rows so that each man has the drawing board of one unit in front of him and the table and drawers of another unit behind him.

The drafting board may be easily adjusted by one man, it is claimed, and may be used in high or low, vertical or horizontal positions as well as any intermediate adjustments.

The drawing board is made of California Sugar Pine. The wood is heated before gluing to insure glue penetration and maximum holding strength. Steel end cleats are put on the board for additional protection against warping.

Steel Cylinders Precision Bored

Each spindle of this machine is equipped with a Moline Automatic Retracting Boring Head which prevents dragging of the single-point cutters during the withdrawal stroke.



No. 116FB, Hydraulic Feed Machine, with hydraulic end-clamping fixture, for precision boring of steel aircraft engine cylinders.

The machine illustrated is one of many designs which Moline is prepared to supply for production of defense equipment.

—Your inquiries will receive prompt attention—

BORING—HONING—DRILLING—TAPPING—SPECIAL MACHINERY

MOLINE TOOL COMPANY

MOLINE, ILLINOIS Cable Address "Holehog" Moline ESTABLISHED 1901

McCORD UNIT HEATER DISPLAY

The McCord Unit Heater will be displayed by the McCord Radiator & Manufacturing Co. The modern design with rounded corners is said to combine improved appearance with greater strength. An all copper heating unit with individual turbo spiral fin tube core is reported to provide even distribution of heated air at high velocity. The entire heating unit is spring suspended and floats free in the casing, eliminating rigid connections between cabinet and unit. The unit is intended for use in both offices and factories.

WETMORE REAMER AIRCRAFT TOOLS

The Wetmore Reamer Company will feature in Booth 398 special reamers and boring bars which are used in the aviation industry, and other phases of the national defense program.

HOUGHTON METAL WORKING PRODUCTS

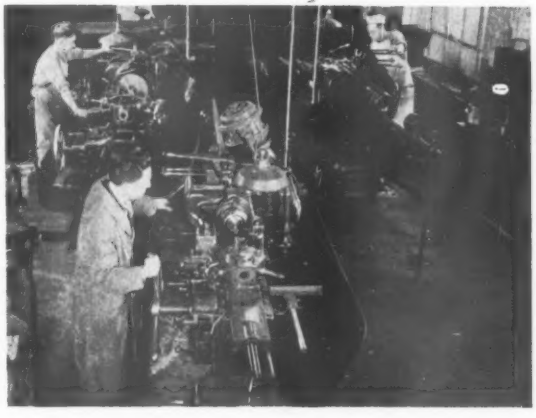
Processing and maintenance materials to aid in speedier manufacturing under the defense program will be displayed by the E. F. Houghton Company in Booth 116.

The exhibit will feature metal working products, including cutting oils, rust preventives, heat treating salts, industrial lubricants and "Vim Tred" leather belting.

New varieties of Rust Veto to meet government and industrial specifications for protection against rust and oxidation of metals will be displayed with a new rapid test demonstrating the resistance offered to a concentrated corrosion-producing solution.

In the heat treating section salts for high speed steel tool treatment will be emphasized, as will the Perliton Liquid Carburizer used extensively for rapid production of small parts. Deeper cases, up to .150 inches have been found practical, it is said, in this method of salt bath carburization.

This Is NOT "JUST ANOTHER BUSY PLANT"



DON'T get us wrong. The plant of the Morse Tool Company is operating at peak capacity. Production has been pushed up to the fullest extent of our facilities.

While increasing production has, of course, been our major concern, new developments have not been allowed to die on our drafting tables. Improvements in design of the standard tools of the company are still considered as important as in normal times. New types of tools which will handle work more efficiently and economically are constantly being produced.

Obviously, it would be much simpler to rely only on the old designs and old methods—and concentrate entirely on getting work out. But in looking to the future, we want you to always consider the products of the Morse Tool Company as those which are designed and manufactured to meet the most up-to-the-minute standards. For that reason, product improvement and development will continue to be an extremely important part of our present program.

We're not exhibiting at the A.S.T.E. Show this year. However, if you can arrange to visit our plant to see the methods now employed and the tools produced, we can assure you of a most hearty welcome. May we look forward to seeing you?

MORSE TOOL CO. PRODUCTS ARE:

Turning Tools, Milling Cutters, Spot Facers, Special Reamers, Form Relieved Cutters, and all types of Special Tools.

MORSE TOOL COMPANY

116 E. Goldengate Ave. Detroit, Michigan

OHIO CRANKSHAFT TOCCO JUNIOR

The Ohio Crankshaft Company will introduce in Booth 202 the newest Tocco Junior machine, a streamlined, single-station 20 KW output utility unit specially designed for heat-treating small parts.

Because of its size this machine if of interest to the manufacturer of small parts who has surface-hardening and heat-treating problems not warranting installation of more elaborate equipment.

Said to provide all the major features of the larger models, this small unit comes in two types; one for applications not requiring quenching such as annealing, brazing, soldering, heating for forming, and forging; the other for localized Tocco-hardening. The basic machine has a flat top on which may be mounted any desired fixture. Larger models will also be displayed.

SEE OUR EXHIBIT

OF

CEMENTED CARBIDE TIPPED TOOLS

BOOTH No. 133

MACHINE AND TOOL PROGRESS EXHIBITION

MARCH 25th TO 29th INCLUSIVE

★ ★

VISIT OUR

MODERN AND NEWLY ENLARGED SHOP

WHILE YOU ARE IN TOWN

SUPER TOOL COMPANY

21650 HOOVER ROAD • DETROIT, MICHIGAN

JANETTE MOTORIZED SPEED REDUCERS

The right angle worm style of motorized speed reducer will highlight the exhibit of the Janette Manufacturing Company in Booth 378.

These machines are built in six sizes covering a range of ⅛ to 10 HP in speeds of 5.9 to 431 rpm.

Any machine can be mounted in sixteen different positions, or single or double flange mounting can be substituted for the foot type of base. The large grease reservoir in the gear case ensures an ample supply of grease without frequent greasing.

NICHOLSON FILES FOR SPECIAL USES

Among the files featured by the Nicholson File Company in Booth 384 are the Long Angle Lathe File, Foundry File, and Files for Stainless Steel.

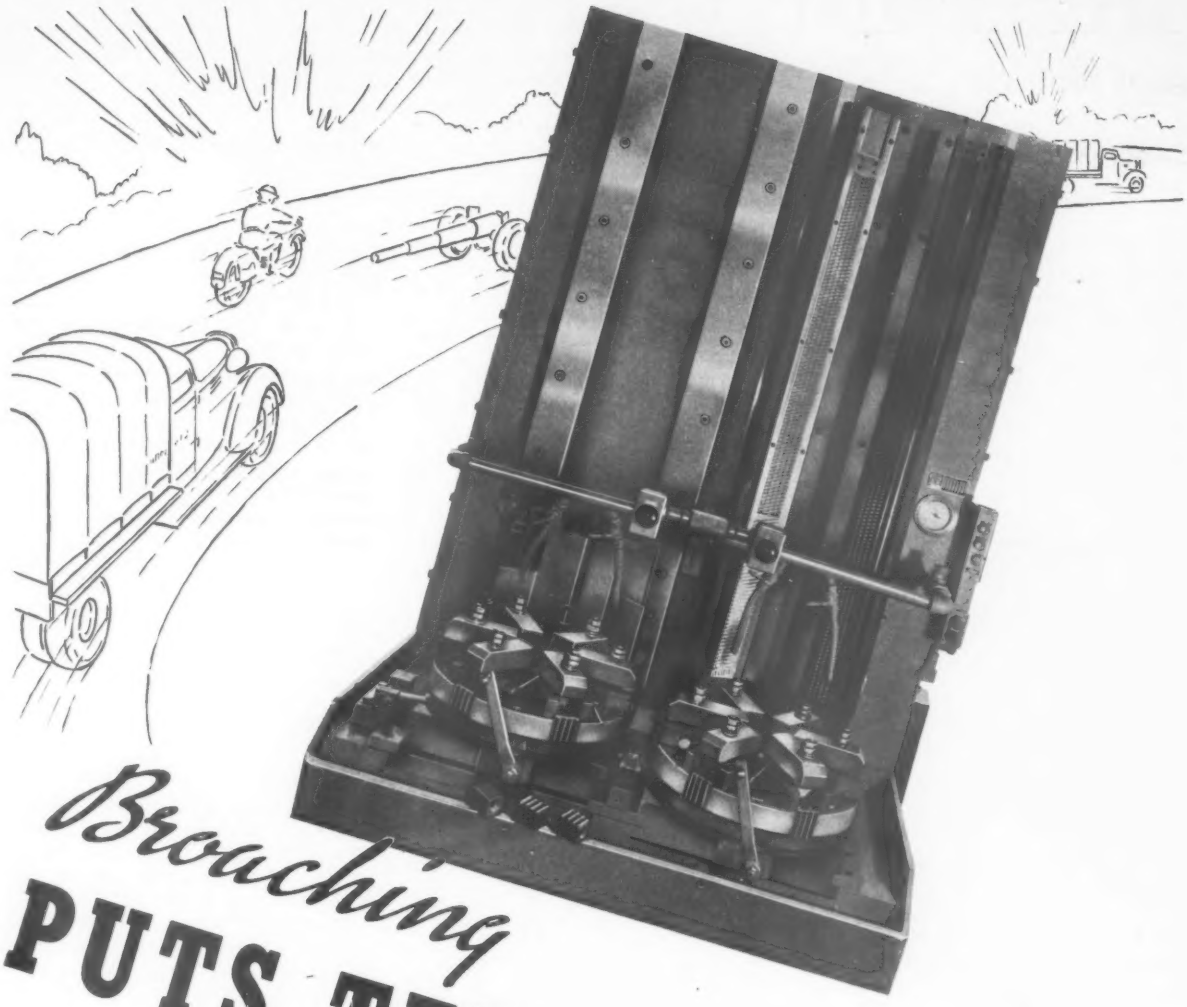
The long angle lathe file is said to be a rapid, free-cutting file, specially designed for lathe filing. This file will cut faster than the regular mill file and will leave a superior finish.

Foundry files were originally developed for snagging castings in foundries, but are now used also for removing fins and other rough filing. These files have extra strong teeth and heavier set edges. They are said to resist shelling off or breaking out.

The chromium and nickel content of stainless steel makes it tough and tends to shorten the life of the general purpose file. A special file developed for these steels leaves a better finish and lasts much longer.

CIRCULAR TOOL SLITTING SAWS

The Circular Tool Company, Booth 163, will display high speed slitting saws, screw slotting saws, and other types of metal cutting saws from ¼″ to 10″ in diameter, as well as a line of combination center drills and center reamers.



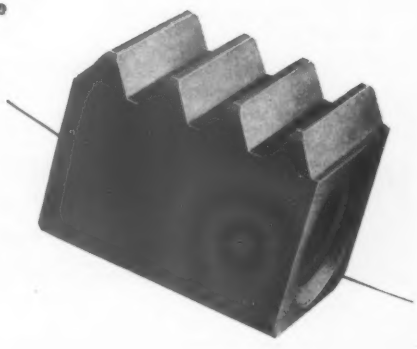
Broaching PUTS TEETH INTO IT!

Things must be done—done well—and speedily!

Here's a case where a manufacturer wanted to "put teeth" into his production—specifically, rack teeth in a steering gear ball nut part. Detroit Broaches are now producing the parts at the rate of 235 pieces an hour.

The work is done on twin-slide machine, each slide having a six-station index and two broach inserts—one for roughing out teeth and one for finishing. Each stroke of the tool slide completes a finished part.

That's only one of the thousands of applications of Detroit Broaches that are daily bringing lowered production costs and bigger output to plants over the country.



DETROIT BROACH CO., INC.
6000 Beniteau Avenue • Detroit, Mich.

GROB BROTHERS

SAWING MACHINE

A new deep throat combination band sawing and filing machine, the NS-24, will be featured by Grob Brothers in Booth 150. The machine is said to be built for heavy duty or fine work for making all types of dies, templets, sheet metal parts, and jigs; and in many cases is claimed to eliminate shaper and milling work.

The Grob Electric Butt Welder, improved with magnetic switch, is built into the machine for convenient welding of saw blade. This permits fast set-up for internal sawing. Automatic in operation, the attachment is equipped with grinding wheel.

Another feature is the toggle lever arrangement permitting operator to cut curves without releasing feed. A hydraulic check prevents danger of too fast feeding when cutting into opening.

STRAIGHTENING
SPLINE SHAFTS 66% FASTER
Production increased from 60 to 100 per hour when this operation was put on an 8-ton G-F-P Press.
SPEED-UP PRODUCTION WITH G·F·P PRESSES
PRESSING LININGS INTO PUMP CYLINDERS 50% FASTER
Production rate increased 50% when job was put on a 20-ton G-F-P Press.
BURNISHING SPLINED HOLES 122% FASTER
When the operation of burnishing splined holes in sprockets was put on a 20-ton G-F-P Press, the production rate increased from 90 to 200 per hour.
Get in touch with the nearest office for information regarding the application of G-F-P Presses to your production problems.
GENERAL MANUFACTURING COMPANY
6432 FARNSWORTH AVE., DETROIT, MICHIGAN
Chicago—John Morley Davie—4125 Belle Plaine Ave. • Cincinnati—George H. Diers—4807 Yarmouth Place • Cleveland—The Cleveland Duplex Machinery Co., Inc., Penton Bldg. • Detroit—McKee-Kenyon & Co.—1627 W. Fort St. • New York—Triplex Machine Tool Corp.—125 Barclay St.
GENERAL Flexible POWER PRESS

SCHNEIBLE WILL

CLEANSE AIR

Visitors will be able to actually see what goes on inside a Schneible Dust Collector when it is in operation, at the Claude B. Schneible Company Booth 320.

A small Schneible Multi-Wash Dust Collector built to scale with a glass housing and neon tubes lighting the interior will be in operation.

Dusty, smoky air from Convention Hall will be drawn into the collector, washed, excess moisture entrained and the cleansed air returned to the hall. Illustrations of some actual installations will also be featured.

LINK VALVE

SPRING TESTER

A valve spring tester which in one operation checks compression coil springs for load and for squareness will be featured by the Link Engineering and Manufacturing Company in Booth 117.

This model is equipped with a Load Selectrol for operation instead of the previously used electric eye. This is said to permit closer load limits, greater operating speed, and more easy adjustment, without requiring the removal of the load dial cover. When adjusted, the operator need only pull lever and observe warning lights which burn if spring is not right.

MOORE PRECISION

JIG GRINDER

The Moore Precision Jig Grinder will be displayed by Marburg Brothers in Booth 206.

This machine is designed to correct and to finish jig-bored holes in all kinds of tool work after hardening. The work is said to be located quickly within jig borer accuracy and then ground to the finish size. A large range of holes, both straight and tapered, can be handled because the adjustable planetary movement of the grinding wheel permits a wide latitude in size. Automatic or hand-feed, for straight or tapered grinding, is provided.

Use Standard Jig and Fixture Parts

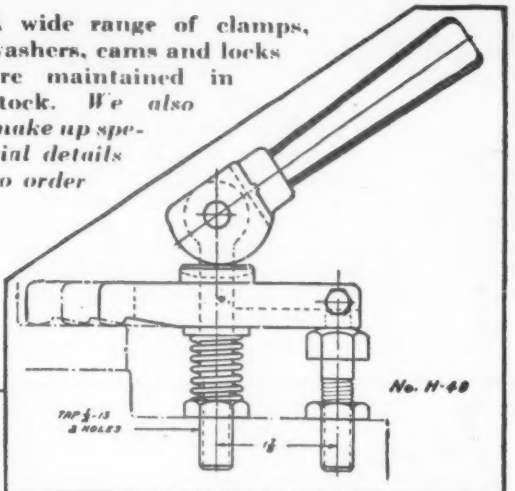
Save 50% Designing Time and Many Man-Hours in Construction

HOW TIME IS SAVED:

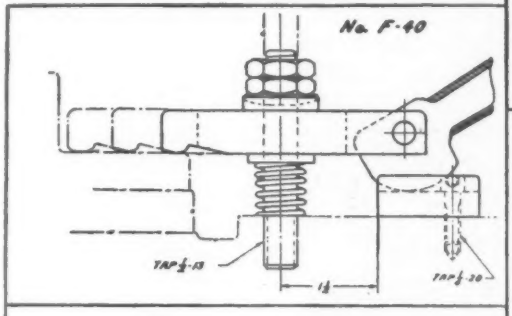
(1) Check your assembly drawings, note details
(2) Select details from Siewek Catalog (loose-leaf binder with working drawings on each page)
(3) Remove sheets with details selected, insert under layout and trace, show location and size of necessary holes
(4) Mark detail with Siewek Catalog number

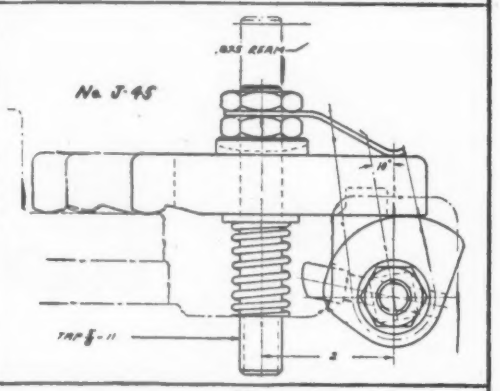
Clamps, Cams, Washers, Nuts, Clamp Rests and Hinge Pins are hardened. Studs are alloy steel heat treated.

A wide range of clamps, washers, cams and locks are maintained in stock. *We also make up special details to order*

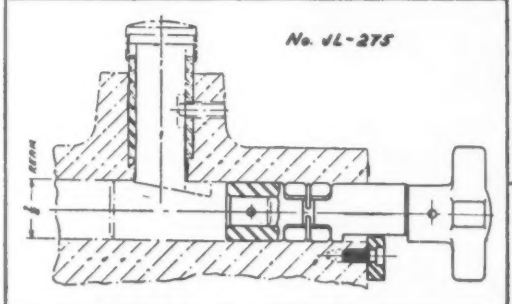


Clamp Assemblies
H-40
J-45
L-60
C-40
F-40
M-15

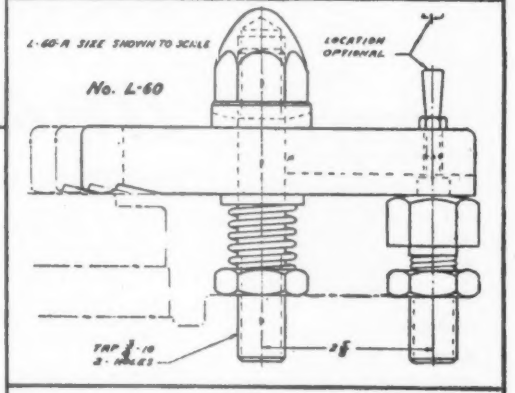


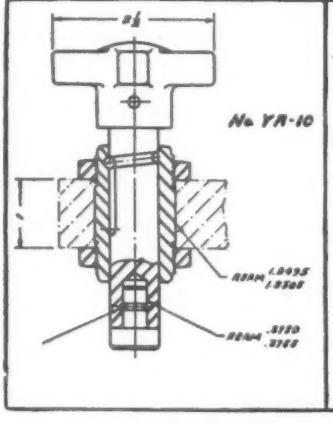


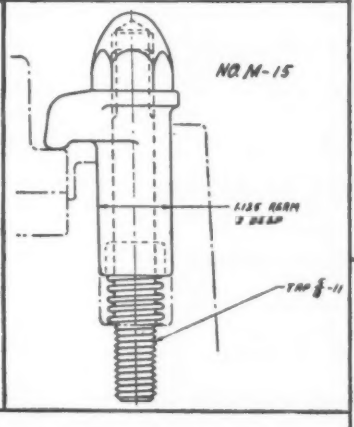
Jack Lock
JL-275

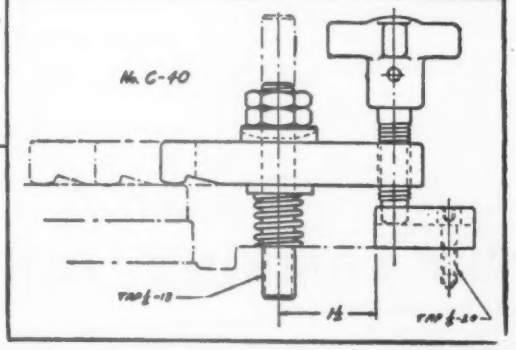


Cam Long Lock Travel Clamp
YA-10









Send TODAY for your copy of Siewek loose-leaf, template tracing catalog.

SIEWEK TOOL COMPANY

2348 Wolcott St. **Ferndale, Mich.**

CHICAGO MFG.

LATHE CENTER

Two new items, a helical groove lathe center and a centrifugal action air separator, will be featured by the Chicago Manufacturing and Distributing Company in Booth 332. The lathe center with its left-hand grooves is intended to provide lubrication for the entire surface of the work supported by the dead center on the tail stock. When used with CMD Lathe Center Point Oil, manufactured by the same company, it is claimed to have a 15 to 1 ratio in running time over the conventional type of lathe center. The Center Point Oil is also recommended for heavy journals, rivet spinning, and deep drawing operations, by the manufacturer.

The new high speed Air Separator has no moving parts and requires no adjustments. By applying centrifugal action to the air, all water, oil, and dirt is said to be removed from the air stream. Allowable pressure in the two inch capacity separator is 250 pounds. Pressure drop is prevented by large air passages throughout the cleaning and cooling unit. A 250 pound gage indicates the pressure on the inlet.

GORHAM SHOWS

CUTTING TOOLS

The Gorham Tool Company will display in Booth 128 tools made from each of the three tool material groups in which the company specializes. Displayed will be a group of defense items with the tools which are being furnished for use in their production.

The three classes of tools include Forged High Speed Steels, Cast High Speed Steels, and Gormet. The latter is a non-ferrous cobalt base alloy used primarily on tools where red hardness and resistance to abrasion are of prime importance. It cannot be annealed, hence its use is limited to those applications on which all machining subsequent to casting can be economically performed by grinding. Gormet cutting tools are used principally on cast iron and non-ferrous machining.

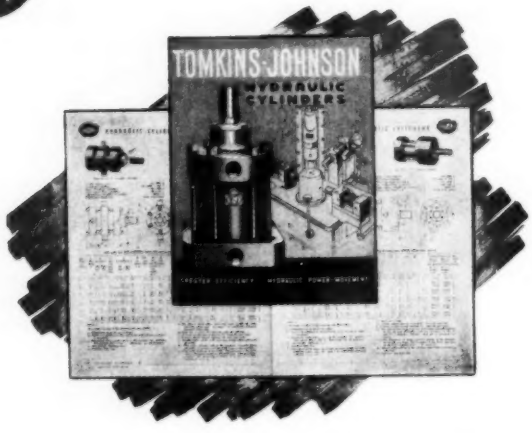
TWO TYPES

OF TOWMOTORS

Two types of Towmotors will be featured in Booth 152 by the Towmotor Company. One is built for handling loads of 3000 pounds in close quarters, and includes a heavy-duty hydraulic lifting mechanism giving lifting speeds of forty feet per minute under full load. Rapid travel both forward and backward is provided by a transmission having two forward and two reverse speeds. Outside turning radius is 68 inches and speed from one to ten miles per hour in both directions. Mechanical features include a new style mounting for lifting mast, drive integral with frame and clutch housing which permits removal of clutch plate without moving either transmission or motor.

Recent advancements included in the larger type Towmotor are fast turning, easy steering action, heavy-duty four-speed transmission with high and low speeds in both forward and reverse. The load carrying capacity is 6000 pounds, while a direct drive oil pump supplies hydraulic lifting and tilting.

new



and

jammed to the gills with practical information on Hydraulic Cylinders.

Your request on your company's letter head brings your copy promptly.

SEE T-J HYDRAULIC CYLINDERS AND OTHER PRODUCTS AT A.S.T.E. MACHINE & TOOL PROGRESS EXHIBITION

BOOTH 230

address

THE TOMKINS-JOHNSON CO.

624 No. Mechanic Street — Jackson, Michigan

MACKLIN SHOWS ENTIRE ARMY CAMP IN MINIATURE

The Macklin Company exhibit in Booth 161 will feature a complete army camp in miniature. The types of wheels used for grinding operations on guns, tanks, airplane parts, truck parts and other equipment used in the defense program will be exhibited.

FARMER DISPLAYS VARIED LINE

Ray H. Farmer Company will display in Booth 405 punch presses, bench shears and brakes, benders for semi-production forming, chip-breaker grinders, tool grinders, drill chucks, mandrels, circular metal saw grinders and arc welding equipment.

STANDARD SHOP EQUIPMENT

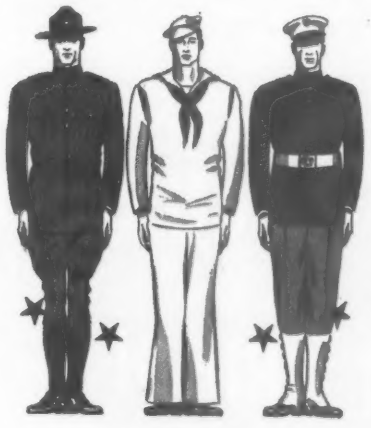
The Standard Shop Equipment Company is planning to display in Booth 262 clamps, nuts, wedges, step blocks, and other standardized appliances used in setting up machinery of all types.

ENTIRE LINE OF SPEED NUTS

Tinnerman Products will show in Booth 232 their entire line of Speed Nuts, including hundreds of actual assemblies showing how Speed Nuts and Speed Clips are used to increase efficiency and reduce assembly costs.

REMEMBER!
THE A.S.T.E. TOOL ENGINEER
HOST BOOTH 136

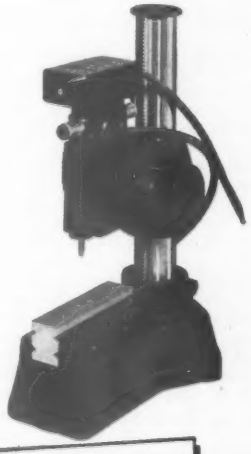
Prepare For INSPECTION



The Sheffield Electrigage has eliminated the bottleneck of slow, tedious dimension checking in many inspection departments because it flashes its answer instantly—just as fast as the work pieces are presented. If the signal light flashes amber the part being gaged is within specified tolerances. Green shows oversize, red undersize.

The accuracy of this gage is .000010" at any tolerance. It can be set for tolerances from .012" to .000050".

The Electrigage is flexible, consisting of a gaging head, light unit and base. The three elements may be used in one assembly for inspection department work or for checking purchased parts on arrival. The gaging head may be mounted on a machine to check parts in the process of manufacture while still on the machine. In such use the light unit may be assembled with the gaging head or with other light units at some location which would permit the control of several machines by one man.



Write for information about the wide use of the Sheffield Electrigage.

SHEFFIELD
GAGE CORPORATION • DAYTON, OHIO, U.S.A.
MASTER GAGEMAKERS

LESSONS LEARNED FROM THE
European Aircraft Industry

ARTHUR NUTT, Vice-President in Charge of Engineering of the Wright Aeronautical Corporation, was a member of a party of five men (three of the others were from the automotive industry and the fifth was from Pratt & Whitney) who were invited by the French Purchasing Commission to go to France in the spring of 1940 with the object of helping the French solve their airplane production problems. Recently he recounted his experiences to the Greater New York Chapter of the A.S.T.E., and they provide some additional information on the fall of France while serving as an example of what America must not do.

In passing through Genoa, Italy, he noted that the reaction of the people was not one of eagerness to get into the war. Those with whom he talked expressed their feelings as being with the Allies although they realized that their government was bound by treaty to aid the Germans. It was interesting to note, he commented, that the Italian attitude at this time toward talking about such questions in public was quite free and open as compared with what it was two to four years before when they were extremely close mouthed and secretive.

In Paris the American party started an inspection of the factories which were then working on two twelve-hour shifts—seven days a week. It was impossible to train men enough to set up a three-shift day. The failure of the French partly arose from the fact that their production program was scheduled to reach its peak during the spring of 1941—one year too late.

Hindsight being what it is, a leading parlor game for months has been to probe the reasons why blitzkrieg has succeeded. Arthur Nutt here contributes more first hand information to add to that of T. B. Carpenter's article. (Tool Engineers, Sept. 1940, Pg. 13.)

Experts Drafted

The French failed to learn the lessons of the selective draft which were made evident in the previous World War. Toolmakers and diemakers were urgently needed because of removals by draft. There were still labor difficulties to contend with and government paternalism had lowered the working class standards and morale. Four years ago production in France was down to 50 per cent of normal. Fifth column activities, crooked politics and graft were in evidence everywhere.

One year after the war had started, the French government had failed to:

1. Encourage industry to expand
2. Arrange for financial assistance to armament manufacturers where needed
3. Arrange for amortization of loans
4. Expedite improvement of designs without red tape

You are assured LOW COST Precision Production with Midwest Circular Form Tools . . .

Notice that the tool shown has continued to produce accurate parts for this Midwest customer through dozens of successive grinds until only ¼" of the original tool circumference remains. Accuracy was maintained right down to the last grind, and our customer writes that their production cost per piece was 14% lower.

This lower cost precision production could be proved in your plant, too, with MIDWEST precision circular form tools. We are able to still give prompt service on this type tool, so call the local Midwest sales engineer now. Midwest Tool & Mfg. Co., 2370 W. Jefferson Ave., Detroit, Michigan.

The Part:

Shown above are miniature cylinder heads for scale-model gas engines of one cylinder used in the construction of model boats, airplanes, etc. The material is aluminum. The precision limits necessary for this part were accurately maintained throughout the entire life of the MIDWEST form tool.

Visit our Booth No. 146 at the A.S.T.E. Show, Detroit, March 26th to 29th incl.

MIDWEST *Precision* METAL CUTTING TOOLS

END MILLS • SLEEVES • COUNTERBORES • DRILLS • SPECIAL TOOLS

REAMERS • MILLING CUTTERS • FORM TOOLS • CARBIDE TIPPED TOOLS • ADJUSTABLE HOLDERS

5. Eliminate duplicate inspection of ordnance material
6. Eliminate penalties for failure to make deliveries
7. Remove profit limitation of 4 per cent.

With regard to the last point Mr. Nutt commented that it was impossible to figure a military contract two years ahead and keep within a 4 per cent profit range without running a real risk of actually suffering a loss. French manufacturers could not make more than a four per cent profit on one contract to average up a loss on another.

The following examples were cited as coming first hand (without interpreter) from the Air Ministry and the Air Staff:

One airplane manufacturer had a two-engine bomber on test. It was to be flown between two points at minimum speed with a view to establishing its gasoline consumption. The pilot failed to follow instructions but instead flew at a speed considerably above minimum, making the results of the test worthless. This was not discovered until some time later and was typical of the lack of coordination and control.

Every airplane engine had two gasoline pumps—always of the same design. Five years ago the manufacturer who made these had Government regulations drawn up in such a way that two pumps would be specified for every plane and only his design could meet these specifications.

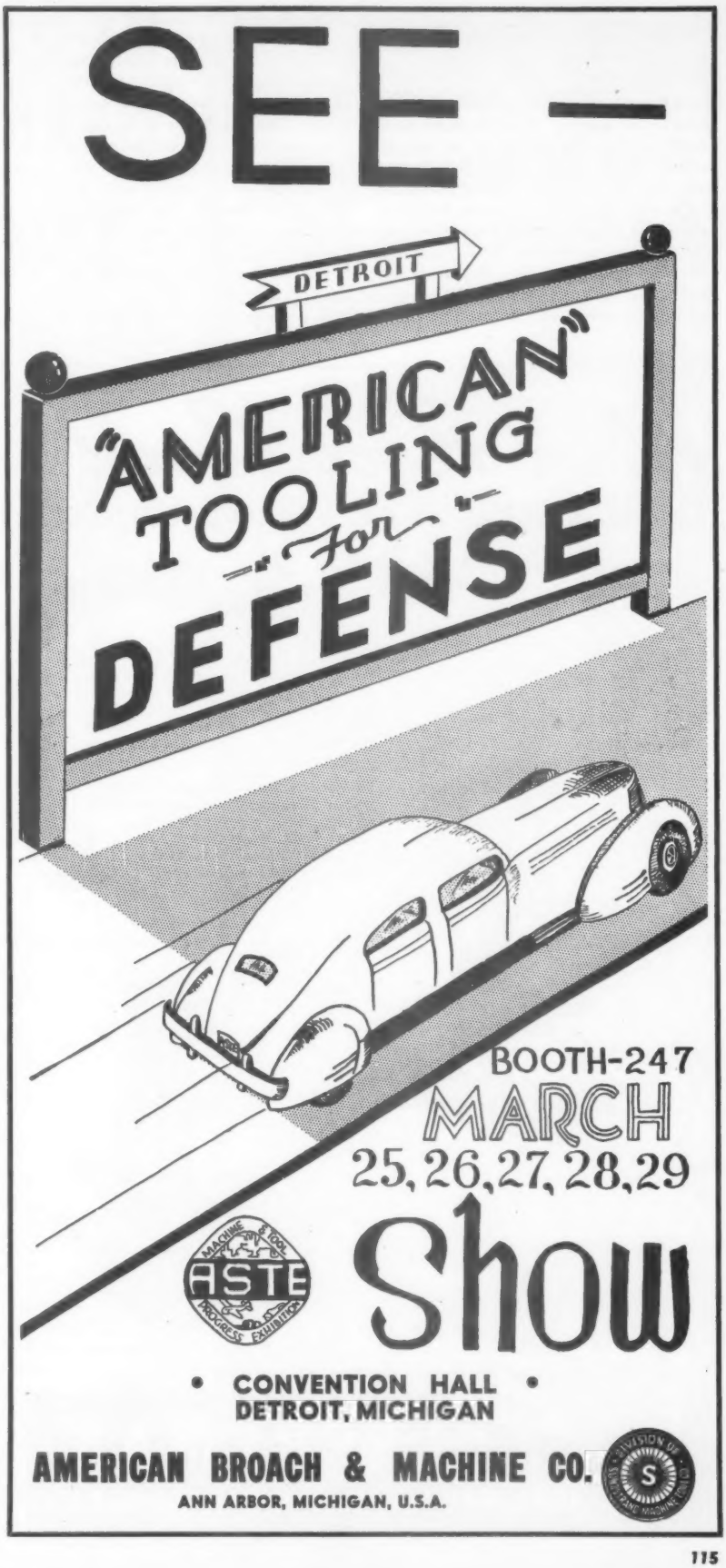
Another case where bids were let for small airplane parts, it was the Paris representative of an American concern that raised the price above that originally quoted. Mr. Nutt drew a comparison with these conditions by mentioning the clean way of doing business in Great Britain and the United States.

Other elements which contributed to the difficulties of the French—Their bombardment interference all over the country was poor. As an example, the American party was invited to the Air Ministry for luncheon which took place in a six-story building about one half a mile from the Eiffel Tower. It was a reinforced concrete building with yellow and orange facing. Since there was no building in Paris higher than six stories, it was, of course, one of the most conspicuous objects from the air in the city. When the Air Ministry was asked why this building had not been camouflaged, the answer came, "We never thought of it!".

Luncheon Bombed

At 1:00 P. M. the meeting convened and cocktails were served at 1:15. At 1:18 an alert sounded. When the French officers were asked if they were staging a demonstration for the benefit of the American party, no answer was given and then one of the members of the party stepped out on a balcony and saw a clus-

(Continued on following page)



EUROPEAN AIRCRAFT

(Continued from preceding page)

ter of three bombs land in a nearby apartment house section. Then another came down scarcely 150 feet away so that all made a hasty retreat to a bomb-proof shelter in the building. There were 260 airplanes in the raid and these had gone over Paris at an altitude of 16,000 feet. Any doubt as to whether the German airmen were good shots was dispelled, Mr. Nutt stated, when it was found that they had put thirty-five bombs into this building from a height of 16,000 feet.

Another reason for French difficulties was that they failed to adopt dimensional as well as material standards. Their lack of coordination was very poor. For example, the Air Ministry started to take the American party out to a nearby airfield. When they arrived, they found that the field had been moved much to the Air Ministry's surprise. In another field six American airplanes had been delivered and here again Air Headquarters had not been informed so that they lay idle for a considerable period of time. The American party went up to the front line and visited one airfield in which there were a small number of grounded planes with mechanics standing around, doing nothing. It developed that they were helpless to make repairs because of lack of spare parts.

The French failed to put new engine types into production and did not push production rapidly enough. While the Germans went from 1,000 to 1,500 planes a month, the French were still debating about increasing their rate from 800 to 1000. They had a six months' program set up when it should have been for two years. Their communication system was poor. After one raid on Paris the entire telephone system was completely disrupted.

Underground Plant

They did start to do something at the very last. In a nearby rock quarry they tunneled in at a depth of 70 feet, put in cement floors and beaver board walls and had the entire Hispana-Suiza plant moved in there in three weeks time. Some of the French realized what was going to happen. One general said to Mr. Nutt pointing to a map, "Here is where the Germans are going to break through. If I had 500 tanks and 500 Curtiss Hawks I could stop them". Of course, he never got that equipment and ironically enough that is where the Germans actually did break through.

Another instance of a last minute supreme effort was the construction of a four-story double walled structure surrounded by excavated earth on all sides and reinforced with rails and two-inch steel bars. This structure was seven feet thick at the top and designed to withstand a direct hit from a 2,000-pound bomb. The outside structure had no connection with the inside so that production operations could continue even though a severe raid was in progress. This structure was to have been covered with dirt, trees and gardens as camouflage.

Mr. Nutt stated that the French preferred the air cooled to the liquid cooled airplane engines from a vulnerability standpoint. They felt that the Curtiss Hawk was an excellent machine and that its performance had done much to make the Allied missions effective. They were known to have brought down two or three Messerschmidts per plant and yet in the case of the Paris raid previously mentioned which lasted over an hour, the entire squadron of Curtiss Hawks in a nearby field failed to get off the ground until twenty minutes after the raid was over. Mr. Nutt also stated that the French gave the British Royal Air Force the highest praise and he found no expression of dissatisfaction with the British assistance.

Mr. Nutt stated that he had been a member of an American group which had inspected the German airplane manufacturing plants in 1932, 1934, 1936 and 1938.

When Peace Comes ☆

Cleereman Machines Will Still Be Cutting Costs

When the rush of rearmament is past, and the world has turned to peacetime work, Cleereman Drilling Machines and Jig Borers, now being used to help speed America's defense program, will still be cutting costs.

The design, materials and workmanship in Cleereman Drilling Machines and Jig Borers are unexcelled. They assure accuracy and low cost production for many years of hard service.

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CLEEREMAN

DRILLING MACHINES and JIG BORERS

IT *BELONGS* IN EVERY TOOLROOM

Lower Spindle, Grinding Inside Contours.

Upper Spindle, Grinding Inside Contours.

Upper Spindle, Grinding Angles on Curved Surface.

Boyar-Schultz
PROFILE GRINDER No. 2—Dual Spindle Model

Two spindles, operated by 2 separately controlled motors make this machine practically **two** Profile Grinders, each versatile enough to handle the more complicated types of tool and die work.

Both spindles operate at the high speed of 10,000 R. P. M., with vertical oscillation. This assures efficient precision grinding, even with small diameter wheels.

Bench Model No. 1

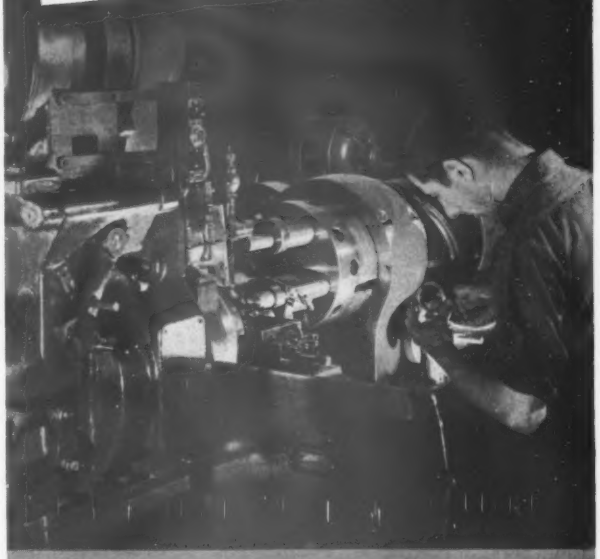
Recommended for fitting dies and punches, grinding die clearances, and other time consuming jobs.

High spindle speed of 20,000 R.P.M. with vertical oscillations of 100 per minute assures real precision profile grinding.

WRITE FOR CIRCULAR
"Cost Reducing Tools For the Toolroom"

BOYAR-SCHULTZ CORPORATION
2116 Walnut Street, Chicago, Illinois

ANOTHER MACHINE TOOL BUILDER INSTALLS A CLEVELAND MODEL "A"



• Certainly no more careful buyers of machine tools exist than machine tool builders themselves, and here is a Cleveland *Single Spindle* Automatic, Model A, in the plant of a well-known Rochester, New York machine tool builder. This 3¾-inch Cleveland is shown producing oil ring nuts cut from 2½-inch SAE 1120 steel tubing in lots of 500 pieces or less, at a considerable saving over former methods. Operations consist of gauging, boring, forming, recessing, facing, reaming and cutting off. A variety of work is assigned to this machine, in every instance reducing costs. • Accessibility for adjustment and ease of tooling up with standard camming are characteristics liked by operators in every plant using them. • Model A is built in 9/16-inch to 8-inch capacity.

THE CLEVELAND AUTOMATIC MACHINE CO., Cleveland, Ohio
Sales Offices: NEW YORK, 50 Church Street—DETROIT, 2842 Grand Boulevard—CHICAGO, 565 West Washington Street—CINCINNATI, 314 American Building

CLEVELAND
Single Spindle
AUTOMATICS

New Literature

Of Interest to the Tool Engineer

(145) Machine Tools

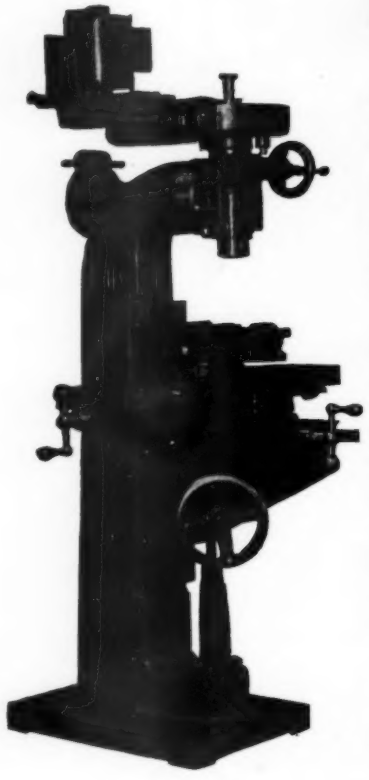
Atlas Modern Shop Equipment. 72 pp. Atlas Press Company, 314 North Pitcher Street, Kalamazoo, Michigan. This 30th anniversary catalog includes complete information on 1941 models of Atlas lathes, drill presses, arbor presses, and shapers, and announces two new machines—a compact bench miller and a multiple spindle drilling machine.

(146) Toggle-Clamp Kit

De-Sta-Co Toggle-Clamp Templates Kit. Detroit Stamping Company, 356 Midland Ave., Detroit, Michigan. This kit contains templates made to actual dimensions and scaled precisely which enable the tool designer to instantly select the proper toggle clamp for each particular condition. He can then place the template on the drawing board under the paper and in a few minutes trace the toggle clamp in correct position and exact size—without pre-figuring or tedious detail. This kit contains eighteen different templates and will be sent without charge upon request to accredited Tool Designers or other executives who might have occasion to use the templates. All requests must include company name and position and mention of the TOOL ENGINEER.

BREAK THAT BOTTLE NECK
in your tool room with a

40-H INDEX



at one third the cost you have in mind.

IT MILLS slots, keyways, cavities, irregular curves with end mills 1/8" to 3/4" diameter in tool steel.

IT DRILLS to accurate locations without layout.

IT BORES up to 3" holes in steel—vertical, horizontal or at angles.

HAS VERNIERS for locating 8"x16" at one setting.

The fact that we are constantly receiving repeat orders from users is proof of our machine's performance.

Write for details and quotation.

Visit us at the Machine and Tool Progress Exhibition
BOOTH No. 159

Blank & Buxton Machinery Co.
3000 E. Michigan Avenue, Jackson, Michigan

(147) Tantung Tools

Fansteel Tantung "G" Economy Tools. Fansteel Metallurgical Corp., North Chicago, Ill. This new general purpose grade of hard cutting alloy is composed of tungsten and tantalum carbide in a matrix of cobalt and chromium. It is said to machine steel, as well as cast iron, brass, aluminum and many other materials. Tantung "G" is obtainable in solid tool bits for use in tool holders, also in the form of "Economy" tools.

(148) Industrial Tools

Stanley Tools for Industry, Catalog No. 50. 56 pp. The Stanley Works, New Britain, Connecticut. A complete new catalog showing those new Stanley Tools especially designed for all types of industrial production and maintenance work, with particular reference to items suited for the Aircraft Industry. Because of its condensed size it will be found more convenient than the catalog containing the full line of this manufacturer's tools.

(149) Welding

Welding Positioners. 12 pp. Cullen-Friestedt Co., 1318 South Kilbourn Avenue, Chicago, Ill. This circular describes machines said to offer a new economy, convenience and safety in production welding. They position welding assemblies easily and quickly for "down-hand" welding on top, bottom, and sides of the weldment with just one set-up.

(150) Safety Tools

Non-sparking Ampco Safety Tools. 8 pp. Ampco Metal, Inc., Dept. TE3, Milwaukee, Wisconsin. This folder explains the line of about 400 different safety tools which Ampco manufactures for use when

there is danger of fire or explosion. The tools carry the approval of Factory Mutual Laboratories of Boston.

(151) Vise Catalog

Simplex Steel Slide Vises. 16 pp. Desmond-Stephan Mfg. Co., Urbana, Ohio. Illustration and descriptions of a complete line of modern vises for industrial requirements.

(152) Castings

Meehanite in Industry. 50 pp. Meehanite Research Institute of America, Inc., 311 Ross Street, Pittsburgh, Pa. A collection of articles about Meehanite castings which have been published in trade journals recently.

(153) Ladders

Aluminum Ladders from Alaska to Samoa. 44 pp. Aluminum Ladder Co., 256 Addams St., Tarentum, Pa. A complete description of many types of Aluminum ladders for industrial and commercial use, including data on aluminum gangways, stages, conveyors.

(154) Gear Computation

Bulletin 270. 44 pp. Michigan Tool Co., 7171 McNichols Rd., Detroit, Michigan. This bulletin includes Change-Gear formulae and tables for hobbing machines, formulae and tables for checking gears by the ball method and pin method, a table on hobbing speeds, complete tables of decimal equivalents of fractions for use with the change gear formulae. A limited number of the new booklet are available for distribution to production executives engaged in gear production.

HOW TO ORDER

Booklets listed in these pages or information on new equipment may be obtained by using the post card bound in this issue. Merely fill out one coupon for each item desired, being sure to print plainly and to include position and company. Mail the card to us and you will receive the information desired at once.

(155) Data Sheet

Gisholt Performance Data Sheets. 8 pp. Gisholt Machine Co., 1229 E. Washington Ave., Madison, Wisconsin. The current release of data sheets explains how the production of Diesel engine fuel injector bodies, garage equipment parts, collets, and tractor steering-clutch-drums was speeded up on turret and automatic lathes.

(156) Storage

The Stackbin System. 12 pp. Stackbin Corp., 75 Troy St., Providence, Rhode Island. This Catalog No. 500 contains the latest information on the Stackbin improved method of storage and handling.

(Continued on following page)

RACINE

New VARIABLE VOLUME HYDRAULIC PUMPS

RACINE announces its new 1000-lb. Variable Volume Pump. Advanced in design and construction, it incorporates the special advantages of smooth, quiet operation—needle roller bearings—mechanical seals. An exclusive method keeps vanes hydraulically balanced. Hydraulic governor automatically maintains desired pressure without by-passing of oil.

CAPACITIES—12-20-30 gallons per minute.
VARIABLE PRESSURES—Up to 1000 lbs. per sq. in.
MOUNTINGS—Foot or flanged type.

Let our engineers help you with your hydraulic problems; send for literature today.

RACINE HYDRAULIC VALVES

Engineers and designers, you are offered a complete service for oil hydraulic systems — Variable Volume pumps—Feed controls—Pressure regulators. A complete line of hydraulic valves — Manual — Pilot — or Electrically operated. Let RACINE assist you with your hydraulic problems.

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Please send me your new catalog P-10-A on Variable Volume Pumps and Hydraulic Valves.

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Street.....

City.....State.....

Send for Data Today!

NEW LITERATURE

(Continued from preceding page)

(157) Die Steels

High Carbon High Chromium Die Steels. 8 pp. Crucible Steel Co. of America, 405 Lexington Ave., New York City. The chief characteristics of these Die Steels are said to be the exceptional resistance to wear and variations in carbon and molybdenum content which provide graduations in toughness. A description of the properties of these steels is contained in this folder.

(158) Blue Printing

Answering Users Demands. 4 pp. C. F. Pease Co., Chicago, Illinois. This data sheet gives information on the popular finisher-printer combination which is said to combine low cost with speed and quality.

(159) Tool Catalog

Acme Tool Catalog No. 39. Acme Tool Co., New York City. This Catalog contains information on the Acme line of production tools, including Live Center, Drill Chuck, Universal Tool Holders, Flexible Shaft Machines, lathe headed Chucks, Profiling Machines, and many others.

SPEED CASE STEEL
A LOW CARBON OPEN HEARTH PRODUCT
Assures You...
1. INCREASED PRODUCTION
40% to 80% Production increase over comparable steels like SAE X1020 or X1314 due to machinability and reduced rejections.
2. MACHINABILITY
Machines as fast as SAE X1112
3. CARBURIZING
Carburizes like SAE X1020
4. PHYSICAL PROPERTIES
Equal to SAE X1020-X1315-1115
5. UNUSUAL DUCTILITY
180° Bend (Cold Drawn - 1" Rd)
6. SMALLER INVENTORY
Due to Versatility of Speed Case
JOBBERS NOTE!
Reduce Your Inventory
SPEED CASE
the ALL PURPOSE Steel
will allow you to reduce the number of different steels you are now carrying in your stock.
ASK US FOR DETAILS
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THE FITZSIMONS COMPANY
YOUNGSTOWN, OHIO
Licensor
MONARCH STEEL COMPANY
HAMMOND • INDIANAPOLIS • CHICAGO
PECKOVER'S LTD., Toronto, Canadian Distributor
MANUFACTURERS OF COLD DRAWN CARBON AND ALLOY STEEL BARS

(160) Gear Catalog

1941 General Catalog. Atlantic Gear Works, New York City. Included in this catalog are full specifications of a wide variety of gears and information regarding special services rendered by the manufacturer.

(161) Tool Steel

Jessop Top Notch Shock Resisting Tool Steel. 6 pp. Jessop Steel Co., 611 Green St., Washington, Pa. This folder contains information regarding application in tools and dies for cold or semi-hot work where resistance to severe and repeated impact is important.

(162) Tool Grinder

All-In-One. 8 pp. T. C. M. Mfg. Co., Harrison, New Jersey. Illustrates and describes this equipment for grinding and lapping of cutting tools of all types, including cemented carbide tipped, Stellite, Rexalloy, and high speed steel.

(163) Steel Shape

Standard Steel Shapes Booklet. The Commercial Shearing & Stamping Co., Youngstown, Ohio. This booklet illustrates and describes fully a number of circular steel shapes which can be purchased as standard items by manufacturers, and should be found helpful by design engineers.

(164) Pneumatic Tool

Catalog 52. Independent Pneumatic Tool Co., Chicago, Illinois. This catalog contains action pictures and specifications on the entire line of THOR pneumatic tools and accessories.

(165) Oven Catalog

Pereco Pottery Equipment and Supplies. Pereny Pottery and Equipment Co., Columbus, Ohio. The entire pereco line of ceramic equipment, supplies, forges and crucibles is represented.

(166) Lubricants

Metal Cutting Lubricants by Sulflo. Sulflo, Inc., Elizabeth, New Jersey. This folder gives a general description of nineteen different Sulflo lubricants for metal cutting. It also contains a chart indicating conditions under which each should be used.

Grinding Instruction

The Care and Operation of Portable Precision Lathe Grinders. By Fred O. Orthey, Sales Engineer, The Dumore Company, Racine, Wisconsin. 14 pp. 25c. This booklet gives a general description of the grinding process, some of the problems of precision grinding, and some of the typical money-saving grinding setups that can be put to good advantage in the average shop. Please order copies of this booklet direct from the publisher, mentioning the TOOL ENGINEER.

Leads the Field TWO WAYS!

IN ACCURACY. If *precision* tapping is your problem, the Haskins Type C Tapper is your answer. So finely engineered is this sensitive machine, it is now being used in the manufacture of *micrometers* — and *doubling* production, too! Class 3 and 4 fit are maintained with ease when the job requires it.

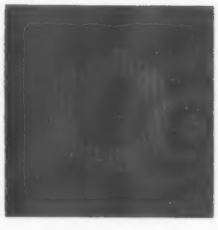
IN SPEED. Easily adaptable to magazine, dial and hopper feed operations, this *air-controlled* tapper goes through its cycles automatically—as fast as the operator can load and unload the work. And that's *all* he has to do! *Of course,* tap breakage and tapping costs go *down* — tapping production goes sharply *up!*

SEND FOR FREE BOOKLET

Illustrating Haskins Tappers at work and giving complete specifications for the three capacities in which Type C is available. R. G. Haskins Company, 2756 W. Flournoy St., Chicago.

R. G. HASKINS CO.

CAN A FLATTER SURFACE IMPROVE *Your* PRODUCT?



The straightness of these bands formed by interference of light waves reflected from the flat-lapped steel surface gives a true measure of its flatness.

Many people have parts, such as seals, which can be improved by greater accuracy of the lapped surface.

Acme lapping technique has been developed to make possible the finishing of parts in production to within five millionths of an inch (.000005") from absolute flatness. The cost is surprisingly low.

Our Engineering Department is available for advice on lapping problems. No obligation, of course.

May we consider *your* problem?

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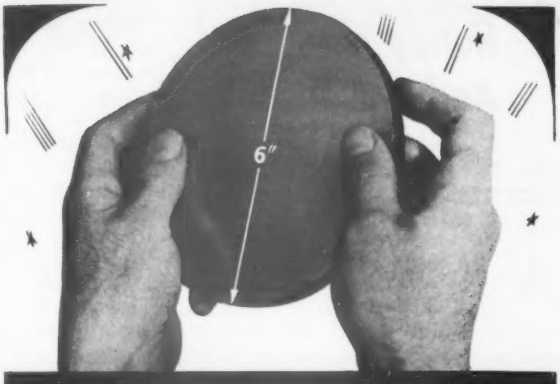


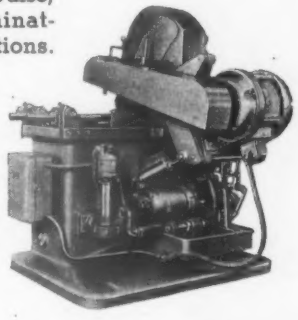
CAN YOU CUT THIS IN LESS THAN 6 MINUTES?

CAMPBELL CUTAMATIC

does it with ease
—and smooths as it cuts!

Cutting a 6-inch round of hard, tough alloy steel to close tolerances—without any danger of burning or case-hardening the material—is an important accomplishment. Smoothing the material while the cutting goes on is another important accomplishment. The **Campbell Cutamatic** does both!

As the **Cutamatic** cuts steels and other difficult industrial material it is also, in most cases, eliminating finishing operations.



Write for the free booklet, "Two Operations in One". This booklet has pointed the way to substantial economies to many men with difficult cutting problems. It may help you.

BUY ACCO QUALITY *in Campbell Cutting Machines; Ford Hoists and Trolleys; Page Welding Electrodes; American Chains; Lay-Set Preformed Wire Rope; Reading-Pratt & Cady Valves; Page Wire Fence.*

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In Business for Your Safety

ACCO

AMERICAN CHAIN & CABLE COMPANY, Inc.

Handy Andy Says—

At the movies, a while back, I ran across an old acquaintance, (Berton Churchill) only it was a one sided recognition a/c he was doing his stuff on the screen. The last time I saw the old stager was at the old Keith's Theatre in Providence, where Bert. C. was playing stock. It was the last performance of the season, and the play was a comedy, wherein the players vied in out-ad libbing even that master of ad lib, the Great Profile. Anyway, it was a hilarious windup, true to the tradition of the troupers to "leave 'em laughing". Well, I'd like to go out that way, too, leaving my readers with a smile. Either that, or a lasting thought that would leave its impress on the consciousness of a people. Well, this time we'll laugh a bit; I'll leave the thought for a final gesture.

Going over back numbers of the Tool Engineer to see if they were all there (and they're not) I came across my first contribution, in the April '34 A.S.T.E. Journal. Well, that's quite a spell, considering that I have barely missed an issue since, and I think it's time we had a change. Anyway, I want to devote time to serious invention, and this writing interferes with business. I have one invention in particular in mind, and it's a humdinger. I'll tell you about it. As you know, a lot of men get kind o' thin on top along middle life, and hair restoring has come to be just as lucrative a racket as—well, you say it. They'd only censor it if I put it down. Which reminds me that mine (hair, now) began to fall when I was about twenty-eight, a/c I was concentrating on an infallible hair restorer that promised to put me in J. P. Morgan's class if it worked. I had the recipe from an old Swedish herb doctor, only a couple of ingredients were missing a/c I had written it down myself and couldn't read it. Anyway, it contained the juice of wild onions, among other things, and my wife wouldn't let me try it on myself (after the first time) and my friends got kind o' cool after an application. Besides, it didn't really work until I thickened it with glue. That made the hair stick.

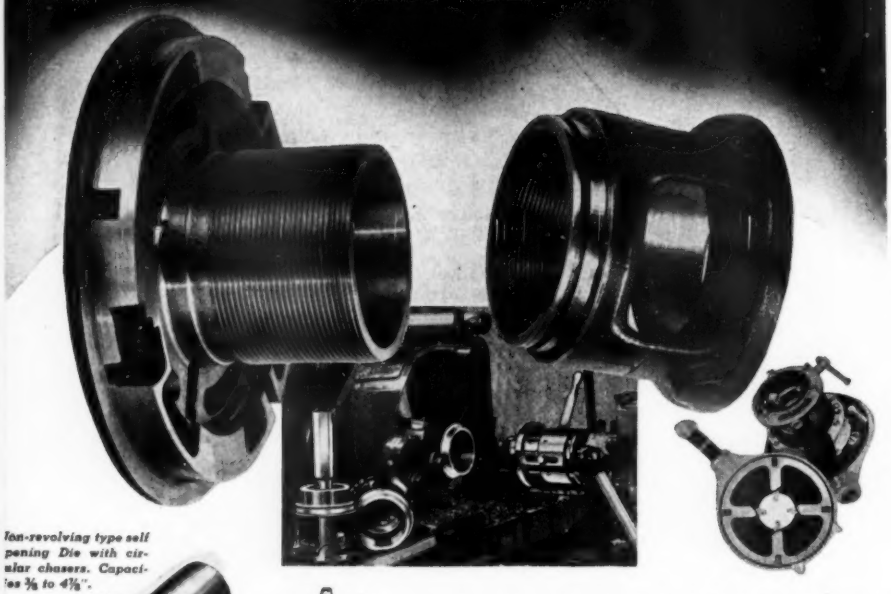
▼ ▼ ▼

One guy kidded me considerably about my thinning dome, and I got real sensitive about it. Then he came down with a fever (typhoid or something) and you should have seen him! Bald as a billiard ball. Then it was my turn to razz. But to get back to my invention: You've all heard of this here banyan tree that sends shoots down from the branches, and the shoots take root and make more banyan trees that send down more shoots and so on ad infinitum until you have a whole forest from the parent tree. Well, I propose to take a hair, bend it over and stick the free end into the scalp, where (maybe) it'll take root. Then I'll cut the loop and have two hairs where only one grew before, and with patience and good luck, a guy ought to have quite a thatch after a bit. Some idea, what?

▼ ▼ ▼

Looking through the Feb. T. E., I ran across a face I could have sworn was Frank Shuler's, only it said Bill Smila below it, so right away I knew it was time to change my cheaters. Well, say one thing for the Tool Engineers, if it weren't for the rubber on t'other end of the pencil we'd be in a terrible fix a/c the rubber doing the really important work which is rubbing out mistakes. But editors, you know, just have to take the razzing when they slip up on one. Oh well, I'll bet Frank and Bill each had a lot of fun out of the mix-up. Which reminds me that a salesman dropped in one day, stuck out his hand and greeted me: "How do you

NAMCO DIES AND TAPS *cut* LEAD SCREW *threads*



Non-revolving type self opening Die with circular chasers. Capacities ⅜ to 4⅞".

Style RSP Positive Opening Precision Tap with circular chasers. Capacities ¼ to 5".

Here are the facts—YOU be the judge

More "RIDGID" pipe die heads are sold than any other make threaded with Namco Dies and Taps. That speaks for their performance.

The time for tapping the malleable casting, 3¼" diameter hole, 1¼" long, is 45 seconds—with a Namco precision circular chaser Collapsing Tap.

The time for threading the male pieces, with a Namco circular chaser Self Opening Die, is 61 seconds. Formerly the thread on this piece was milled—in 4 minutes.

As to accuracy, Mr. Wm. Thewes, superintendent of Ridge Tool Co. says: "these threads are held to .0005" for the 1¼" length of their engagement—lead screw accuracy." And he adds, "scrap is practically nil—we couldn't afford it."

This is just one more proof of performance for savings with Namco Dies and Taps. What might they mean on YOUR work?

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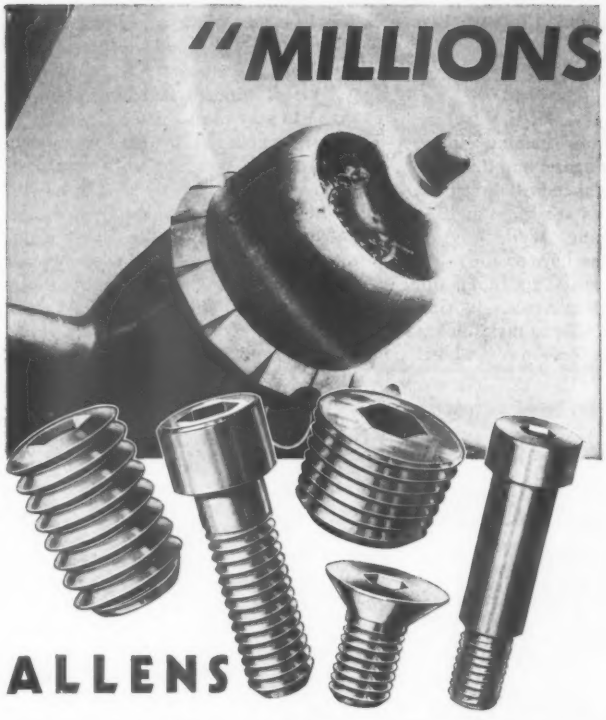
ACME-GRIDLEY 5-6 AND 8 SPINDLE BAR AND CHUCKING AUTOMATICS • SINGLE SPINDLE AUTOMATICS • AUTOMATIC THREADING DIES AND TAPS • SCREW MACHINE PRODUCTS • THE CHRONOLOG • LIMIT SWITCHES • POSITIVE CENTRIFUGE • CONTRACT MANUFACTURING



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— but not ONE CENT for *Failure!*

MILLIONS OF ALLENS—but not one cent for machine down-time or production tie-ups through failure of hollow screws. For Allen Screws are put to the tests of *emergency conditions* in our laboratory routine!

From bombers to boring machines; from guns to gear grinders; in armament *and the machine tools that make it,* ALLENS are doing their famous job of "holding strongly together".

Cold-drawn and "pressur-formd" to new "highs" of strength; precision-threaded for greater holding-power; scientifically heat-treated; visually and manually inspected—ALLEN Hexagon Hole Products are steeled to every stress of defense operations in the field or factory.

Call your local Allen Distributor to supply these "defense units" for your machines or equipment.

Visit our exhibit (Booth 220) at the Machine & Tool Progress Exhibition, Detroit, Michigan, March 25 to 29 inclusive.

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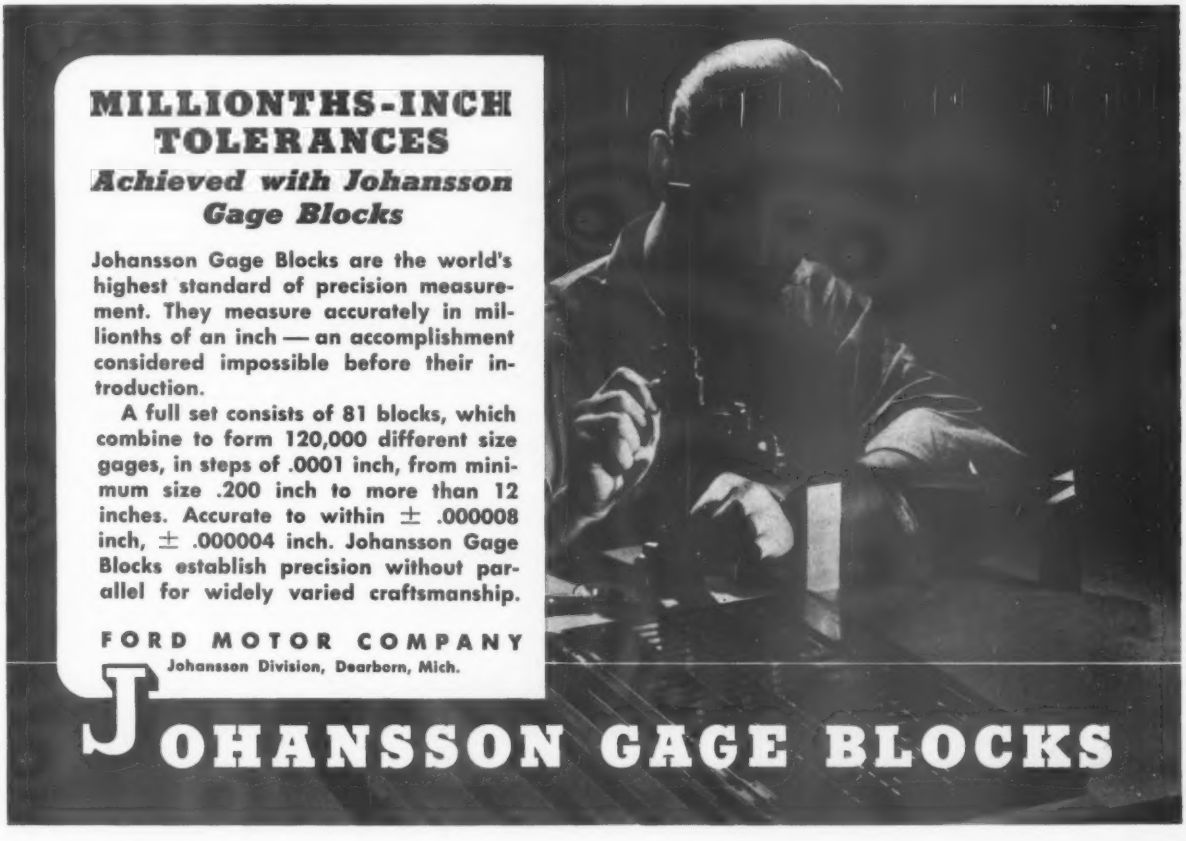

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Johansson Gage Blocks are the world's highest standard of precision measurement. They measure accurately in millionths of an inch — an accomplishment considered impossible before their introduction.

A full set consists of 81 blocks, which combine to form 120,000 different size gages, in steps of .0001 inch, from minimum size .200 inch to more than 12 inches. Accurate to within ± .000008 inch, ± .000004 inch. Johansson Gage Blocks establish precision without parallel for widely varied craftsmanship.

FORD MOTOR COMPANY
Johansson Division, Dearborn, Mich.

JOHANSSON GAGE BLOCKS

HANDY ANDY

(Continued from preceding page)

do, Mr. Herman, you're looking fine." "I feel fine", I said, "only my name isn't Herman. You'll find Wally down in the tool room, where he superintends". "Oh!" in surprise. "Well, it was a natural mistake. You look so alike". So, when next I saw Wally, I said: "Wally, a peddler paid you a fine compliment this morning. He said you looked like me". Says Wally: "He must have been looking at the top of your head". Yes, I think I'll push that invention.

▼ ▼ ▼

Well, with the big A.S.T.E. Machine Tool & Progress Show coming along, we'll soon be meeting again, and this time I imagine that attendance will break all records. Especially as it's right in line with the Annual meeting. Well, progress is in the air, even if the boys on the other side are hell-bent on smashing things up. Well now, I really didn't mean to ring in the war, not being able to make heads or tails out of the mess nohow. Only, if we can keep out of it we stand to make the U. S. A. the economic arbiter of the whole world, because when it's all over the only real winners will be those who managed to stay clear. Not but what I'm for giving England all the help necessary, especially since Win Churchill says that all he needs is the tools and his boys will finish the job. Of course, the English are getting a lot of help from the Greeks right now, and there's another surprise package. Who'd ever have thought those frilled skirts could fight like that! At that, the Italians claim that the Greeks are taking an unfair advantage in their angle of attack.

▼ ▼ ▼

Here, there and everywhere around the town (typical of all of industrial America) there is plant expansion and modernization. Attended the grand opening of Swartz Tool Products the other night, where I met a lot of the old gang and had a jolly good time. Missed Guy Swartz, who is basking on the sands of Florida, but his Three Musketeers—Andy Anderson, Pete Dubois and Ed Wismer—are holding up their end. Anyway, it's a real modern plant all streamlined and geared for the tools of defense. Congratulations, Swartz!

▼ ▼ ▼

Somehow, I can't get invention out of my mind tonight, and come to think of it I'd forgotten all about the one for easing the dogs of the exhibitors at the Show. Well, it's too late to do anything about it now, but I had in mind a sort of crane, built something like one of those head rests the photographers used to keep their patients(?) quiet with while the guy focused the while you looked at the bird. Only, my idea was to put the props under the armpits, with a U shaped bottom which has casters (ball bearing, of course, just to get another rise out of Gene Bouton) to make travel easy. I'd make a drawing of it, but on second thought that's not necessary a/c Tool Engineers get the idea right away and they're used to screwy things anyway. And that, I think, will be all for now because I can smell the coffee perking downstairs and you know what that means. Au revoir 'til we meet in the flesh at the Show.

Yrs. as ever,
Handy Andy.

What Does The Name

PHYSICISTS RESEARCH

Mean To You?

How do you classify the Physicists Research Company? Unless you are among the steadily increasing list of concerns who are familiar with this company's various activities, your conception of what is being done and can be done may not be entirely clear.

At the A.S.T.E. Show, Physicists Research will occupy Booth 112 where the facilities and capabilities of this organization will be presented both graphically and verbally. Special attention will be directed to the two principal interests of the company:

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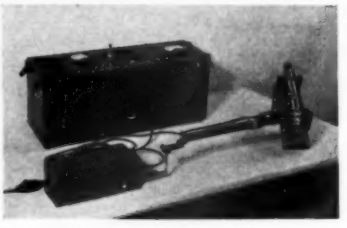
Built in lots of one or more for specific inspection purposes—or for individual research or production control jobs. Industrial-physics methods applied to mechanical problems have produced practical solutions.



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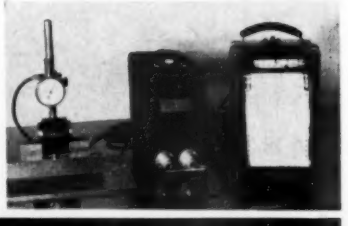
The shop instrument which provides direct dial readings in true inch units of the roughness ratings now generally accepted and widely used.

By visiting our booth at the Show, you will learn of many new and interesting things which have been accomplished recently. Of more importance, you may find that Physicists Research Company can help you in the solution of your own instrumentation problems. We will welcome the opportunity to answer your questions . . . personally, if you attend the Show . . . by correspondence if you do not find it possible to come.



REMEMBER—IT'S BOOTH 112

PHYSICISTS RESEARCH COMPANY

343 SOUTH MAIN ST. • ANN ARBOR, MICH.

NEW CHAPTER FOR A.S.T.E.

On March 25 a large number of Tool Engineers met at the 40 & 8 Club in Seattle to charter a chapter in the American Society of Tool Engineers. The new chapter will have about 75 charter members.

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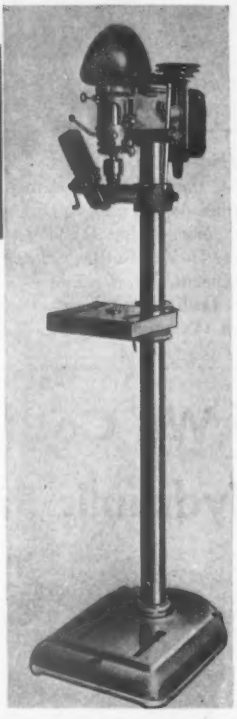

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GENERAL OFFICE AND WORKS
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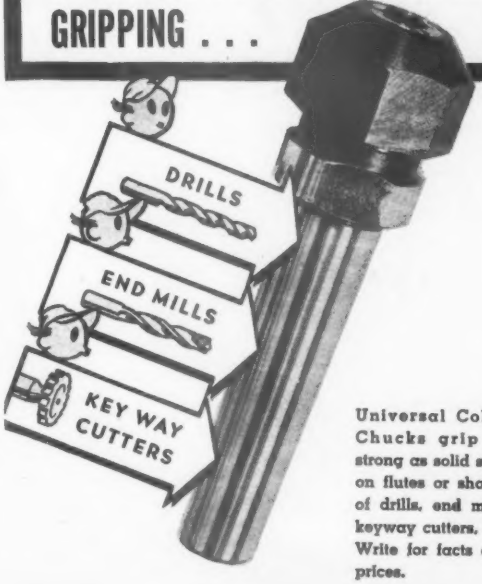

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» » A. S. T. E. DOINGS « «

By IRWIN F. HOLLAND

Baltimore

At the regular monthly meeting on Wednesday, February 5, the following new officers for the 1941 season were elected: Mr. Godfrey Steiner — Chapter Chairman, Mr. Boemie—Vice Chairman, Mr. Leslie MacGregor — Secretary, Mr. John O'Connor—Treasurer.

At the next meeting, the various committee chairmen for 1941 will be elected by the officers.

Major E. D. Perrin of the United States Air Corps spoke on the subject "National Defense Needs as Affecting the Tool Engineer," the local Coast Guard station showed a very interesting sound film on the duties of this branch of the service.

Many of the members had their families present at the entertainment, and refreshments were served afterwards. Prizes were given to all.

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You would get some new ideas about how to speed up your production and cut cost-per-piece.

You would see their self-contained simplicity . . . their high speed operation . . . their positive pressure control that saves dies . . . their ability to form and draw new hard-to-work alloys . . . their inherent protection against overloading and breaking of vital parts.

We will be glad to sit down at your desk and show you how manufacturers are doing it better with Lake Erie Hydraulic Presses.

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Boston

The February meeting of the Boston Chapter was held at the Hotel Lenox with an attendance of 181. And what a party—Wow! New officers voted in at this meeting were: C. A. Lockwood, as chairman, J. W. Geddes, as Vice-Chairman, Warren Ames, as Treasurer, W. W. Young, as Secretary.

Prior to the election, our entire assembly rose for a moment in tribute to Harry Stoney, Past Chairman of our Industrial Relations Committee whose passing during our first year has left a vacancy in our ranks that will be impossible to replace.

Mr. H. P. Berry was the speaker of the evening and his subject "Screw Machines" was heard with great interest. All the shops in this area doing screw machine work had large representations at the meeting and judging by the numerous questions asked at the completion of Mr. Berry's talk, we are positive that some good ideas were taken away from the meeting.

Our Entertainment Committee consisting of John Sylvester, Frank Robertson and Len Sheehy are to be complimented on the fine floor show that followed the meeting. Several of the Tool Engineers were later found trying to find out how to swing a tassle.

Buffalo-Niagara Frontier

The meeting of January 23 was without question one of the finest ever held by the Buffalo-Niagara Frontier Chapter. The scheduled speaker was Mr. Frank O'Brien, Master Mechanic, Camera Works of the Eastman Kodak Company, Rochester, New York, an outstanding authority on small punch press work, he presented his topic entitled "Punch Press Tools" with the aid of Kodachrome slides. A body guard delegation composed of 15 members of the Rochester Chapter attended, to see that no harm befell Mr. O'Brien.

As special guest, we had Ford R. Lamb, who gave a resume of the forth-coming Machine and Tool Exhibition at Detroit.

California

California Chapter met at Scully's Cafe on February 13. Officers were elected as follows: Chairman, Dwight D. Jones;

(Continued on following page)

FOLLOW THE TRAIL TO BOOTH 369 MACHINE AND TOOL PROGRESS EXHIBITION

THE Machine and Tool Progress Exhibition in Detroit could hardly be more timely. And in Booth 369 we will show how many of the leading metal working plants are using Cerro Alloys. These low-temperature-melting alloys which expand slightly on solidifying, are in wide use in scores of metal working applications. Send for further information or visit us in Booth 369.

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Die Construction	Bending of Metal Tubes and Mouldings	Master Patterns
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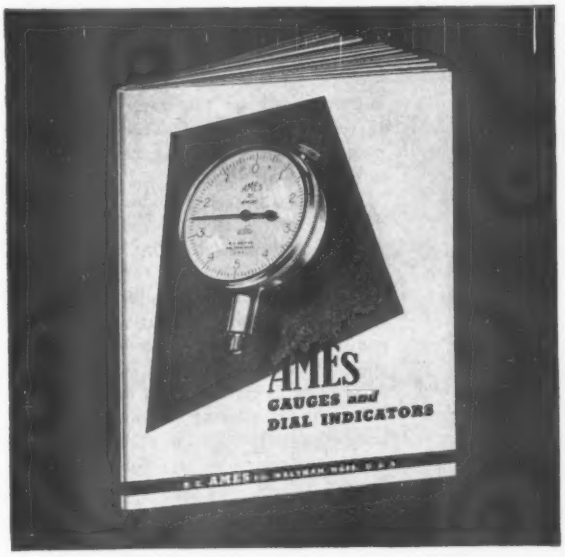

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THE J. C. GLENZER CO.
DETROIT MICHIGAN

A. S. T. E. DOINGS

(Continued from preceding page)

Vice-Chairman, Gill Almquist; Secretary, H. F. Lenz; Treasurer, J. J. Marvin. Installation of officers will take place at the March 13 meeting. A "Tool Quizz" presented by H. P. Lenz was enthusiastically received. This highly educational feature will be reported to the Tool Engineer in greater detail. Future meetings will see more of these brain teasers.

A. J. Denis of the Criterion Tool Sales Co., displayed a line of pump-jigs, boring heads, carbide tools and the Criterion carbide tool grinder.

Gill Almquist demonstrated the Watts Angular Hole Drill for drilling odd-shaped holes.

A lecture on "Super finishing" presented by M. W. Petrie of the Chrysler Corporation proved so interesting the meeting did not adjourn until a late hour. A brush Surface analyzer registering the hills and valleys in finished surfaces in graph form upon a moving tape astonished those attending who were under the impression that a "Jo-Block" was about the last word in smoothness.

About twenty new members were announced and the applications coming in augur well for the imprint this Chapter is destined to make upon the industrial life of Southern California.

Cleveland

A spirited election contest held the spotlight at the February meeting of the Cleveland Chapter of the A. S. T. E. held at Hotel Allerton on Friday, February 10, 1941. After the "smoke of battle" cleared away, the final vote showed that the following individuals were to hold office for the ensuing year: Chairman—C. V. Briner (re-elected), Vice Chairmen—C. Scheihing, Secretary—Wm. Reiff, Jr. (re-elected), Treasurer—Ed Mack.

The present Chairman presented his annual report, highlights of which were: 1. Increase of 85% in membership, 2. A very successful Christmas Party, 3. Reports by all the Committee Heads giving a detailed accomplishment of the past year's activities, 4. The importance of National Defense and what the Cleveland Chapter is doing to cooperate so as to insure its success, with special emphasis on the training of apprentices.

Following this report, Mr. K. J. Karash of Reliance Electric and Engr. showed technicolor snapshots, with explanatory sound effects by himself, of "Our National Wonders" which included views of the following: 1. The Black Hills of Dakota, 2. The Bad Lands, 3. The Grand Canyon, 4. Yellowstone National Park, 5. Carlsbad Caverns, 6. Mt. Rushmore.

"Forging for Peace and War" was the topic of the technical speaker, Mr. Waldemar Naujoks, Chief Engr. of Steel Improvement and Forge Company. Mr. Naujok's talk pointed out to the members the tie existing between the forger and the engineer; where the forging company leaves off with the finished forges, the engineer commences to machine them into useful products.

Through the use of slides the speaker demonstrated various forging processes, forging materials, and forging machines. He stressed the part that forging is playing in the Defense program especially with regard to airplane parts. His speech enabled the engineers present to realize what problems the supplier of the finished forges has to contend with and overcome before he can present the engineer with a finished product that is satisfactory and will withstand every type of stress and strain.

Columbus

The Columbus Chapter held its January meeting at Pomerene Hall.

Messrs. R. J. Freter and S. J. Matchett were elected as the Nominating Committee to select a slate for Chapter Officers.

At the conclusion of the business session, the speaker of the evening, Mr. R. C. Suran, special agent in charge of the Cincinnati Office of the Federal Bureau

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Verson

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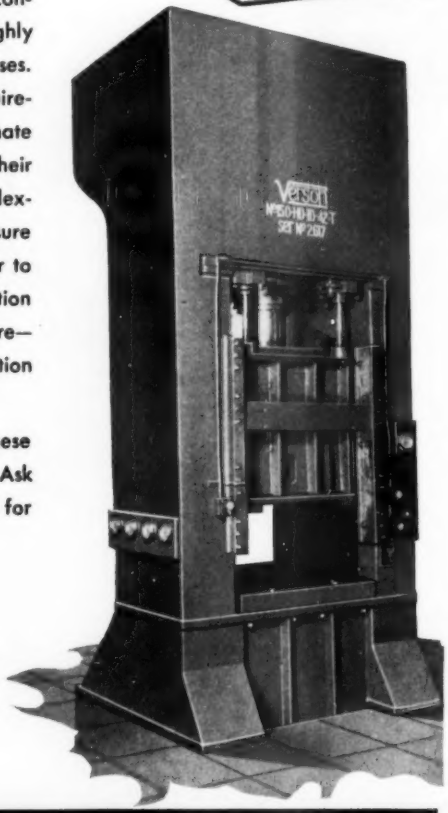

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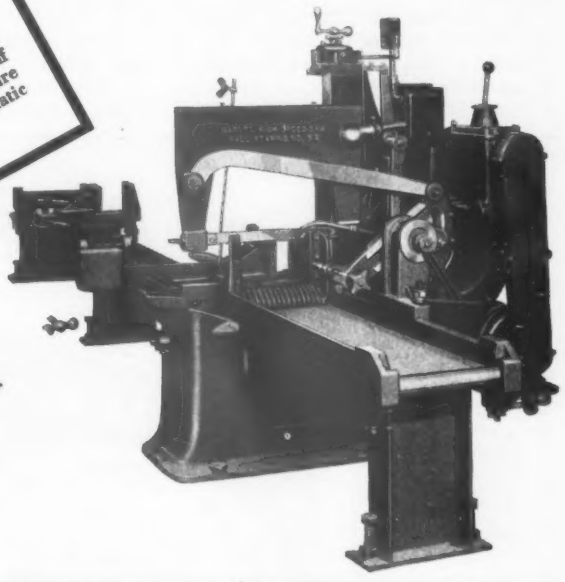

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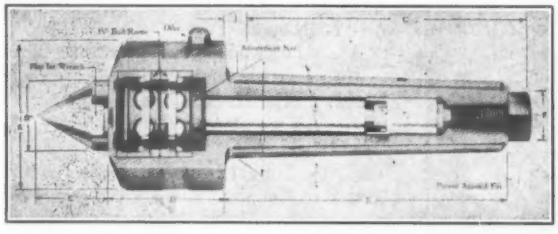

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LATROBE, PENNSYLVANIA, U.S.A.

A. S. T. E. DOINGS

(Continued from preceding page)

of Investigation, U. S. Department of Justice, addressed the group on the activities of his organization. This included a discussion of their jurisdiction over the violations of the espionage, sabotage and related statutes.

Dayton

The February meeting of the Dayton Chapter was held at the Gibbons Hotel, Monday, February 10. After dinner, Mr. Frank Ireland, Gen. Mgr. of the Delco Products Division of General Motors Corporation, introduced by our Chapter Chairman, George Goodwin, gave a very interesting talk about his experiences in local politics as well as sidelights on changing over an automotive parts plant to handle Defense Program work.

After Mr. Ireland's talk the following officers were elected for the coming year; Herman (Whitey) Poock, Chapter Chairman; Howard G. McMillen, Vice Chairman; Henry M. Winter, Secretary; and J. R. Carlson, Treasurer.

In conclusion an open forum was held with Whitey Poock, Earl Johnson, Howard Walther, Harley York, and Frank Wilhelm acting as experts on any problems the boys could think up. Some of the boys must have lain awake nights thinking up questions which were dandies. One question at least will probably be answered at a later meeting.

Detroit

"The minute a man stops learning, things begin to go wrong," is the assertion of Lieutenant Dale M. Garvey of the Army Air Corps. This, he explained, is the reason that the educational program of the Army Air Corps is a never-ending one. Lt. Garvey spoke on the training of Flying Cadets and mechanics, before a record crowd in attendance at the February meeting of the Detroit Chapter.

Major Edgar T. Selzer of the Air Corps discussed the mechanical maintenance of equipment. He stated that there was never a case in which an Army parachute had failed to open provided the person using it has been able to pull the rip cord in time. Upon noting among the guests Lt. Broyderick of the Navy, Major Selzer added that this was a record shared by the Naval Air Corps. The study of Air Corps organization was concluded with a short talk by Captain Louis Buttner on "Air Corps Procurement and Supply."

The meeting was held February 20 in the Detroit Leland Hotel, and at the business session preceding the program the following officers were elected for the coming year: B. L. Diamond, Chairman; Clyde Mooney, Vice Chairman; John A. Feiten, Secretary; and G. A. Centmayer, Treasurer.

Elmira

The A. S. T. E. Speakers Club of Elmira Chapter whose purpose is to "promote public speaking among Tool Engineers," was formed January 15, 1941. The pledge of this club is "I must welcome and never refuse a chance to speak before a group," and has already produced results at our regular A. S. T. E. meetings.

Its officers; Chairman, Augie "Mouse Trap" Stenger; Vice Chairman, John "Bar-Caddy" Donlin; and Secretary-Treasurer, Joe "Saw Blade" Menihan—with nine other very active members, promise double or triple membership in a very short time. There will be plenty of practice in public speaking and constructive criticism.

We would all like to compare notes with other "Lonely Heart" Speakers clubs. Only "He-Men" need apply.

Hartford

At the annual business meeting of the Hartford Chapter, Monday evening, February 3, the following officers were elected for the coming year; Chairman—Henry I. Moore, Vice Chairman—Willson Fenn, Secretary— Harry J. Hauck, Treasurer—Carl W. Moeller.

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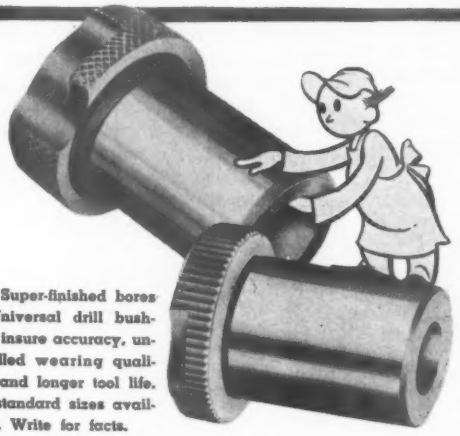
HERE ARE THE DRILL BUSHINGS THAT CUT TOOL COSTS . . .



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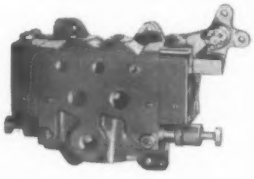

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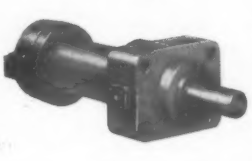

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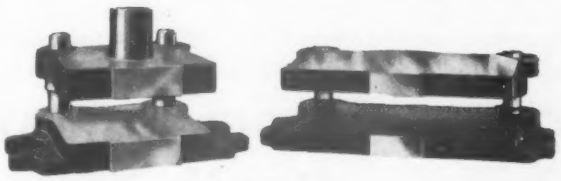

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Middle Western points are served by motor truck from Detroit, Mich. Producto Die Sets are available in semi-steel or steel for mounting dies, for power presses, plastic molds and die castings. Accessories include Dowel Pins, Stripper Bolts, Bolster Plates, Torch Cutting and Welding Steel Plate. Write for the new 100 page Producto Catalog No. 9.

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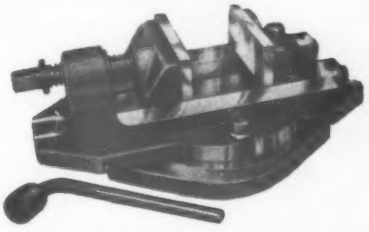

Work is supported and clamped on hardened surfaces. Bodies of semi-steel, reinforced with hardened and ground wearing surfaces, and are practically indestructible. Jaws are adjustable in any desired position and provide extra large opening. Two sizes 6" and 4½".

Producto Vises are available for both heavy duty and general purpose milling and drilling. Full details on request.

See us at BOOTH 324 A.S.T.E. SHOW

★ See Display of Producto Set-up Tools and the Producto Utility Press.

THE PRODUCTO MACHINE CO.

993 HOUSATONIC AVENUE
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DISTRIBUTORS OF DICKERMAN AUTOMATIC PRESS FEEDS

A. S. T. E. DOINGS

(Continued from preceding page)

We regret exceedingly that Mr. Frederic Woodcock could not serve again as Chairman due to his urgent and heavy duties at the Hamilton Standard Propeller Company. Under his leadership the society has gone ahead steadily this year in membership attendance and top notch technical sessions. In appreciation of his services, the meeting gave a rising vote of thanks.

Chairman, Mr. Henry A. Rockwell introduced the speaker of the evening—Mr. Frank W. Curtis, Chief Engineer, of the Van Norman Machine Tool Company and Chairman of the Springfield Chapter. His talk on Jig and Fixture Design proved to be one of the finest instructive meetings of the year. His very clear and to the point remarks and his method of illustrating fixture details in simple and understandable forms were a real technical treat.

Indianapolis

At the January 30th meeting of the Indianapolis Chapter Major Rasmussen of the U. S. Ordnance Department opened some of our members' eyes and ears when he gave a talk with a motion picture on "Industrial Mobilization."

He explained to some extent the function of the Ordnance Department and its responsibilities in this day of "National Defense." Many of us have wondered why it takes so long to perfect a material of defense, but Major Rasmussen showed some of the problems involved in research, experimenting, fabricating and proving of such articles. He emphasized the importance of making these materials to tried and proven specifications so as to avoid the disastrous effect it may have on our men in battle, and the country in general. He brought out the fact that the Tool Engineers of the country are largely responsible for the execution of the "National Defense Program." A short movie of our Army on wheels was shown in conjunction with the Major's talk.

New York-New Jersey

At the February meeting in the Robert Treat Hotel in Newark, New Jersey, election of new officers was held. Mr. Frank Oliver is the new Chairman, and the Secretary and Treasurer were re-elected.

Wilson Ryno reported a satisfactory condition of the Chapter membership, which stands at 407.

The main attraction of the meeting was a symposium on the "Fundamentals of Die Design," conducted by four members of the Chapter, headed by Frank Sheeley of "Hyatt Roller Bearing Co." and Mr. Pace of "American Can Company."

Several interesting questions during the discussion period caused frequent animated exchange of personal experiences and opinions.

The N. J. Highway Department presented a film in technicolor "For Safety's Sake" showing the well organized and developed system of highways of the State of New Jersey.

Philadelphia

The Philadelphia Chapter held its 3rd Anniversary Dinner-Exhibit and Stage Show on Saturday, February 15, at the Penn Athletic Club, Philadelphia.

The exhibit opened at 10 a. m. and the official photographer took pictures of the various booths and the newspaper reporters were on the job all day. The Frankford Arsenal had a beautiful display of ammunition and boards with complete successive operations of shell forgings and cartridge cases.

At 5:15 a general door prize was given out to the general public which closed the Show to all those that did not have dinner reservations. The prize was presented by the P. & W. Company, Philadelphia Office and was a beautiful $25 combination travelling bag and brief case.

The entire group then assembled and about 950 guests sat down to enjoy a turkey dinner. During the dinner 1,000 balloons were cut loose from the balcony

(Continued on following page)

MARCH 25 to 29, 1941
ASTE
SEE OUR DISPLAY
Booth 360
Atlas 7 INCH SHAPER
TWO OTHER TIMELY Atlas TOOLS
MULTIPLE SPINDLE DRILLING MACHINES
Speed up work on drilling and tapping up to ½". 2, 3, and 4 spindles — $195, $310, $350 less motors (1/3 or 1/2 HP).
LATHES
The low cost way to step up production on small-part operations. Power cross feed standard equipment on the F-Series 10" models, prices as low as $107 for 36" bed. Atlas 6" Lathes as low as $66.50 less motor.
Handles Small Jobs Easier, Quicker, and Most Economically
Now that Atlas has developed accurate, ruggedly built machines for all types of machining on small parts, larger machines can be kept steadily on big work. Result: speedier production and lower costs.
This compact Atlas Shaper, handling everything from ½" to 7" stroke, is a fine example of Atlas-engineered economy. Hundreds of tool room and shop superintendents can tell you about cost-cutting successes with Atlas Shapers on the job.
Has crank-type bull-gear drive, Timken tapered roller bearings, complete V-belt drive. There are 4 speeds, 5 automatic cross feeds. Operates from ½ HP motor. Price $265 less motor.
Ask your machine tool dealer and send for the new 1941 Atlas catalog for complete details.
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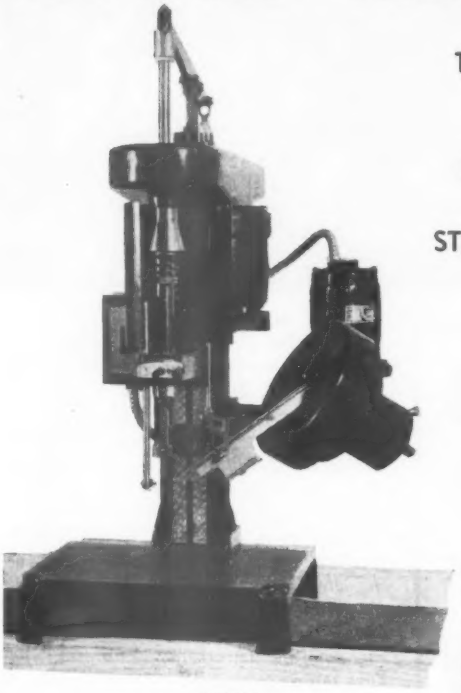
QUALITY SHOP EQUIPMENT SINCE 1911

PRODUCTION SCREWDRIVING
REQUIRES THESE MODERN MACHINES



MODEL A

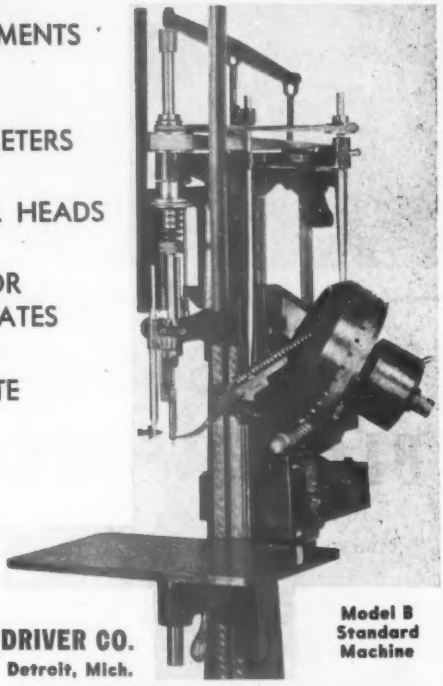
THREE MODELS
TO MEET ALL REQUIREMENTS

SCREW SIZES
FROM No. 2 to ⅜ DIAMETERS

STANDARD OR SPECIAL HEADS

SEND SAMPLES FOR
PRODUCTION ESTIMATES

SEE THEM OPERATE
at the
A.S.T.E. SHOW
BOOTH 155



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Standard
Machine

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MORE SPEED
LONGER LIFE
with PUTNAM END MILLS

In an operation such as that illustrated —milling ¾" slots in a die block— Putnam End Mills permit the maximum speed and feed. In addition, manufacturing and heat treating methods assure long, trouble-free service. Why not prove to your own satisfaction—by actual use on your machines—that the end mills which do "cut faster and last longer" are produced by Putnam?

PUTNAM TOOL COMPANY
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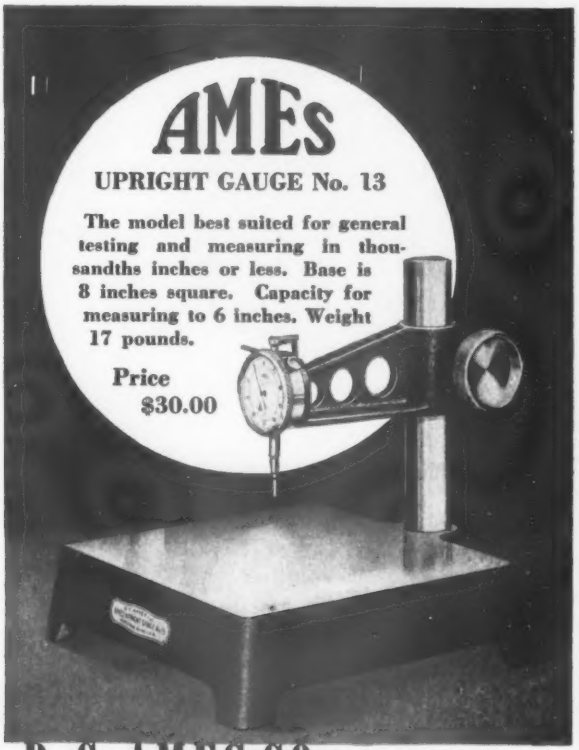
AMEs
UPRIGHT GAUGE No. 13

The model best suited for general testing and measuring in thousandths inches or less. Base is 8 inches square. Capacity for measuring to 6 inches. Weight 17 pounds.

Price
$30.00



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Philadelphia's Dinner
Turkey, balloons, floor show.

PIONEERS of INSERTED BLADE FACE MILLING CUTTERS *SINCE 1918*

Standard type Face Milling Cutters with tungsten-carbide blades

MANUFACTURERS ALSO OF ALL TYPES CUTTING AND BORING TOOLS

PRODUCTION TOOL CO. of AMERICA
6474 LeGRAND AVE.
DETROIT MICHIGAN

A. S. T. E. DOINGS

(Continued from preceding page)

and lower floor carrying advertisements about the Detroit Show March 25 to 29. Various favors were also distributed.

After the dinner the Chapter Chairman announced the program for the evening and our National President A. H. d'Arcambal was introduced. He was received with a tremendous roar of applause. Our good old friend d'Arc addressed the boys telling them that this was the finest Meeting he has ever attended and that he wished us the best of luck and success and sincerely hoped that the incoming officers would do their utmost to carry on as successfully as the present outgoing officers have done.

Gen. W. P. Boatwright, Commanding Officer of the Frankford Arsenal was then introduced. He had graciously cooperated with our Chapter to supply us with a beautiful ammunition exhibit. General Boatwright was well pleased with the splendid gathering of Tool Engineers and was sure that the hearty cooperation of such a vast number of engineers would help our Country in carrying out the rearmament program. He was convinced that the new tools and equipment being produced by the various companies throughout the Country, some which were on display at this affair, will be of great help to the Army and Navy in speeding up our rearmament.

After General Boatwright's address other distinguished Government Officers and men who were introduced, included: Colonel J. Kirk, Officer in Charge of Small Ammunition, Frankford Arsenal, Colonel J. E. Brown, Commanding Officer, Delaware Ordnance Depot, Harry B. Hambleton from the Washington Ordnance Bureau, Major Henricks, Major Miller, Captain Meeks, Captain Chatfield, and one of the best ballastic experts now in Washington Ammunition Division, J. P. McCormick, Mr. Charles Pfaff the

(Continued on following page)

Having difficulty holding tolerances?

FLOATS RADIALLY

DEMAND THE

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ROLLER DRIVE

Floating Holder

for

Taps and Reamers

AUTOMATICALLY compensates for machine spindle misalignment, eliminating over-sized or bell-mouthed holes.

Helps produce unbelievable accuracy on both new and old equipment.

Furnished with male or female taper, straight, threaded or special shanks to fit any machine used for tapping or reaming.

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DROP FORGED "C" CLAMPS

Because they never give, these ARMSTRONG Heavy Duty "C" Clamps are safely used, day after day, to carry these gigantic steel automobile body dies where the slightest spread or spring or the least slippage of the screw would result in disaster.

Here is dependable quality that you too can rely on. Look for the Arm-and-Hammer Trade Mark. It guaarntees a better clamp.

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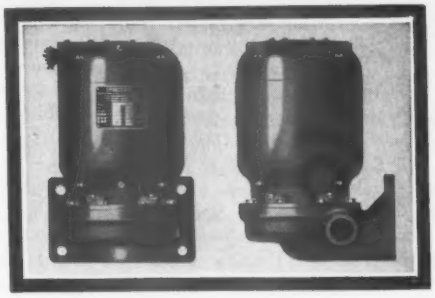

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THE NEW

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MODEL "VBA"

COOLANT PUMP

Compact Streamlined

Because the new Pioneer Model "VBA" Coolant Pump can function efficiently with extremely low water level, permitting its use in shallow places, new opportunities are given pump users and machine tool builders. Many restrictions in mounting are removed. Positive prime is assured even with the reduced height of coolant in supply tank.

Mountings of pumps are made with choice of two outlets — either right or left hand.

The motors are streamlined, and inlet piping is eliminated.

Let us send you complete engineering data on this new development.

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ENGINEERING & MANUFACTURING CO.
33 Melbourne Avenue
DETROIT, MICHIGAN

A. S. T. E. DOINGS

(Continued from preceding page)

shell expert from Frankford Arsenal and many other distinguished guests were present.

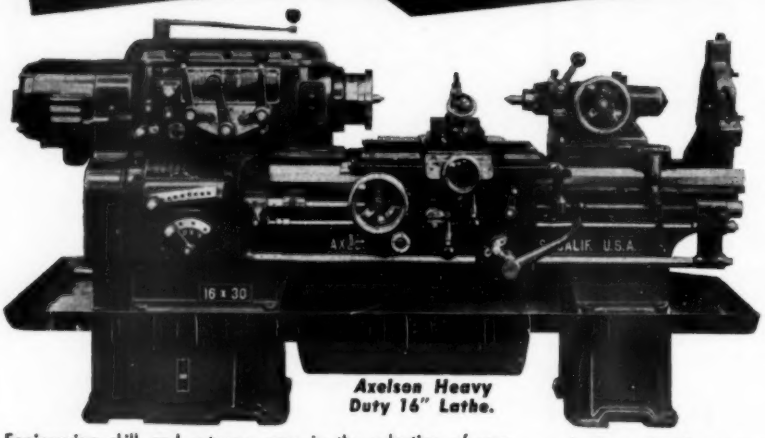
We wish to express our thanks and greetings to the following Chapter Chairmen from out of town that attended this affair: W. T. Gray, Chairman No. 14, Newark, New Jersey Chapter; Frank W. Curtis, Chairman No. 32, Springfield, Mass.; Tom P. Orchard, Chairman No. 34 Greater New York and the new incoming Chairman, Godfrey Steiner, Chapter No. 13 Baltimore. These boys were all asked to take a bow and were given a hearty welcome by all present.

After the dinner a 2-hour floor show was enjoyed. Following the show the exhibitors opened their booths up again and all the guests enjoyed the technical and practical demonstrations put on by the various exhibitors.

Directly after the floor show beautiful dinner prizes were given away by the Entertainment Committee, headed by Edward R. Glenn. They were real prizes as can be proven by our National Secretary, Conrad O. Hersam, winner of the first prize, a beautiful diamond snake ring. It will only be removed from his finger when he dies as he is so proud and puffed up about it that he started immediately to lose buttons off his vest.

Special mention was made of the outstanding work and assistance given by the various Chairmen of our Chapter as a Committee of 28 members who all worked 100% to make this 3rd Anniversary a real success. Particularly we would like to mention Charles Crooke, Jr., who was Chairman of the Committee, ably assisted by W. Stegemerten, Edward Glenn, A. Leplighter, Dean Howard Gross, John Strecker, and John McMonagle, Chairman of our Membership Committee who has done outstanding work during the past year in building up our membership and contributed to a large part to the success of this anniversary meeting.

Leaders FOR ACCURACY, EFFICIENCY AND ECONOMY



Axelson Heavy Duty 16" Lathe.

Engineering skill and extreme care in the selection of raw materials are wasted unless they are accompanied by equal skill and painstaking effort in manufacture. Axelson Lathes are designed right and they are built throughout of materials best adapted to the purpose. On this basic foundation Axelson craftsmen construct a machine tool precise in every operation and finished in every detail. Press the starting button upon an Axelson Lathe—listen to its smooth, quiet action. Place a job between centers, adjust the cutting tool and note how free from vibration it is at any speed and with varying cuts. Remember Axelson Lathes afford a wide range of operating speeds and feeds necessary for fast production.

Axelson Lathes are available in 14", 16", 18", 20", 24", and 32" sizes of various lengths.

WRITE TODAY
Get a copy of Axelson's latest Lathe Bulletin giving detailed information on all sizes and types of Axelson Lathes.

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AXELSON 24-SPEED HEAVY DUTY LATHES

Pittsburgh

For the February Meeting, Mr. D. H. Bruce of the Gisholt Machine Company spoke on turret lathe tooling and automatic chucking machines. An interesting discussion followed. Mr. E. C. Brandt, of Westinghouse Electric & Mfg. Company. gave a short talk on Defense Training, his experiences in Washington, and the work being done by the National Youth Administration. He stressed the fact that Now is the time for all Tool Engineers to do their part to help train young men in the essential trades.

Election was held with the new officers as follows: R. W. Ford—Chairman; William Owen—Vice Chairman; Gardner Young, our good ole Scotchman Treasurer being re-elected; and W. W. Walters—secretary.

Preliminary plans for the trip to Detroit A. S. T. E. Show got underway, and Tom Rees is ready and waiting for your $8.85 for the round-trip from Pittsburgh on Wednesday noon at 12:20 p. m. Our private car will be waiting on the Pennsy with Diner attached.

Pittsburgh Chapter was also most fortunate in having our worthy 'dArcambal with us for an executive meeting at the Wm. Penn Hotel where the Show, Defense Training and Chapter Betterment were discussed. He's a real guy, and it is too bad that we do not get to see him oftener. But they tell me he does have a job too.

Chairman Wib Pierce emphasized that all should make supreme efforts to attend this Show for we do not realize just how much can be gained from an exhibit stressing National Defense Education. All plant executives should try to let their Key men attend for at least a few days.

Racine

The regular monthly lecture and dinner meeting was presided over by Chapter Secretary, Mr. N. K. Helding, in the absence of Chapter Chairman, Mr. A. Zaber.

(Continued on following page)

CUT MACHINING COSTS WITH NEW LOW-COST *Carbide Cutting* TOOLS *by* TECO

TECO'S *Cost-Cutting* Advantages
as a cutting tool include:—

- Machines steel hardened up to 550 Brinell.
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- Gives 10 to 50 times as many pieces per grind.

There is a standard grade of TECO METAL to meet the characteristics of almost any machinable material. Ask for a shop demonstration without obligation. For information concerning special applications and recommendations, address

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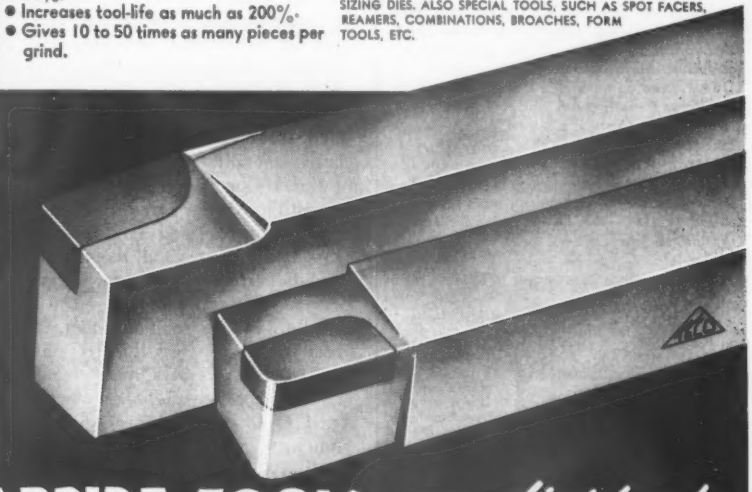
*TUNGSTEN ELECTRIC SUPPLIES CARBIDE BLANKS, TOOLS AND BITS, WIRE AND BAR DIES, TUBING, EXTRUDING AND SIZING DIES. ALSO SPECIAL TOOLS, SUCH AS SPOT FACERS, REAMERS, COMBINATIONS, BROACHES, FORM TOOLS, ETC.

WAR work, run-of-the-mill or both, you can do the machining job in less time at lower cost with TECO Carbide Cutting Tools.

Confronted with Emergency production schedules, resourceful machinists specify modern TECO Tools to break the bottleneck of production, and keep machining costs within economical limits.

Prepare now for increased production and faster deliveries. Let a Tungsten Electric engineer demonstrate the savings you will get by using TECO Carbide Tools*. Discover how quickly TECO METAL steps up your production, steps down machining costs . . . enables you to handle defense work speedily and efficiently.



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Rough Turned or Finished Complete

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Rings, Discs, Blocks, Shafts, Hubs, Bars, and Special Shapes. Tool Steel of all Makes
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STAINLESS & COPPER FORGINGS

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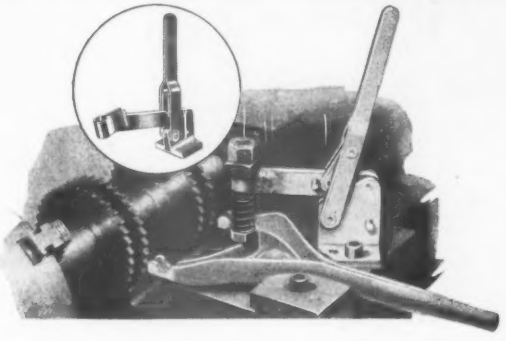

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In every operation where parts must be held in fixtures for drilling, milling, welding, assembly and the like, the production *rate* depends upon positive clamping—and instant release . . . And production *costs* likewise.

De-Sta-Co quick-acting Toggle Clamps are nationally recognized as the efficient, low-cost method of designing and carrying out production . . . Write now for Bulletin No. 40, showing types and sizes best fitted to your requirements.

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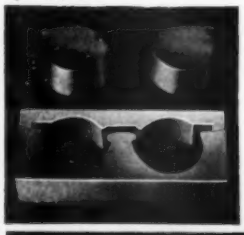
BAND SAWS

In the DoAll Saw Testing Laboratory, difficult jobs of metal cutting are made easy, through the selection of the proper saw, speed of operation, etc.

DoAll Saws come in light or heavy set, 2 tempers, 3 tooth styles and 11 widths (1" to 1/16"). There's a "best" DoAll Saw for each cutting job—that's why DoAlls are so highly praised and recommended in plants everywhere for cutting all ordinary metals and such tough ones as cold rolled nickel, ductile aluminum alloy, laminated low carbon steel sheets, neoprene, etc.



TRIMMING DIE

Used in making sun glasses. Note that "clearance" is provided when sawed with a DoAll precision band saw blade. Die is smaller at top than bottom — eliminating need for filing.

FORGINGS—AEROPLANE PARTS

At Brown Mfg. Co., New York City, the rings at left were made on the DoAll Contour Machine with DoAll band saws in less than 2 hours each, 1 blade being used for 2 pieces. Material is very hard special alloy 2⅝" thick, 17" o.d., 14" i.d. Formerly it took 14 hours and 5 saw blades to split one forging.

Great savings are also made in sawing special jobs like the aeroplane parts at right, one of stainless steel, the other of very tough special alloy steel.

DO ALL SAWS Now in Special Metal Boxes

A modern, compact, convenient way to stock saws. Safe to handle, easy to get at.

Window shows how much saw remains in box.

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Name.....

Address.....

A. S. T. E. DOINGS

(Continued from preceding page)

After dinner the assemblage adjourned to the Rainbow Room to be entertained with a sound movie "Army on Wheels". Secretary Helding then introduced the speaker of the evening, Mr. R. H. Bruce.

Mr. Bruce, with the aid of slides, gave an interesting lecture on "Turret Lathe Tooling". His talk showed early methods in Turret Lathe Tooling and their progression to present day methods. The meeting was opened for discussion after which Mr. Bruce was given a rising vote of thanks.

The secretary announced that an executive committee meeting had been held in January, at which time it was decided to omit the regular January meeting. This Committee appointed a nominating committee, and instructed them to present candidates for election of officers at the February meeting.

Following this announcement, the next order of business was the election of officers. These members were elected, and will be installed and take office at the April Chapter meeting: Chairman — E. Munch, Vice Chairman — Ben Johnson, Secretary—John Pritchard, Treasurer—William Davidson.

Rochester

One of the best turnouts as well as one of the most interesting programs for the year occurred Wednesday evening, February 12 at the Rochester Tool Engineers' meeting. A sizeable crowd of hungry engineers and friends sat down to the turkey dinner at Todd Union University of Rochester dining hall.

Mr. W. P. Powers, Secretary of the U. S. Tool Company of Ampere, New Jersey, gave a brief introduction to his Multi-slide presses and high production millers. He explained the numerous slides as well as movie film of both types of equipment. Any listener unfamiliar with the multiple two level punching and forming machines certainly went away well informed as to how these interesting high production machines operated. The high production millers capable of step and contour milling were ably described by pictures and words.

Preceding Mr. Powers' program was the nomination and election of new officers. Mr. C. E. Lucas was elected Chairman. Mr. Clifford Sears was chosen as Vice Chairman. Mr. Milton Roessel was again elected to the combined post of Secretary and Treasurer. Mr. Don Koehler and Mr. Charles Seeley were elected as members of the Board of Directors.

Installation of the new officers was made after closing of the election proper.

The entire organization appreciated the fine work which was done by the Past

(Continued on following page)

EVEREDE BORING BAR HOLDERS

The Everede Boring Bar Holders are adjustable to fit various size lathes. (Bushings are furnished with each boring bar for use in the Holders.) Everede Holders keep the boring bar in a horizontal position, regardless of any change in the size of the lathe, within limits.

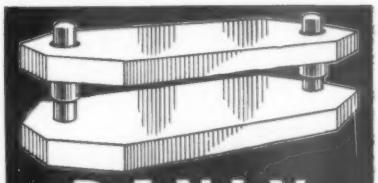
The No. 1 Boring Bar Holder is used on precision bench lathes from 7" swing to and including 9".

The No. 2 Holder is used on engine lathes from 8" swing to and including 12", and the No. 3 Holder on engine lathes from 12" swing to and including 24".

The Holders are made of case-hardened alloy steel. A tool post block is attached to the engine lathe Holders by a chain as shown.

Send for descriptive folder.

EVEREDE TOOL CO.
Willis Stutson
184 N. WACKER DRIVE, CHICAGO
Representatives in principal cities



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ALL-STEEL DIE SETS

STANDARD or SPECIAL

Any Size • Any Shape

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FAST DELIVERY

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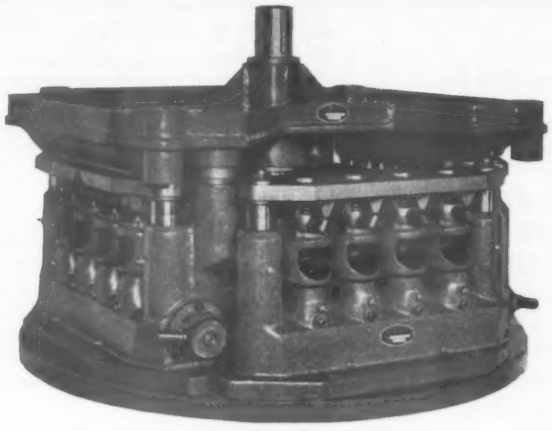
DIE SETS
AND DIE MAKERS' SUPPLIES



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Proposal L2074

Showing four station index fixture — load, drill, redrill, and ream — rocker arms. One lever motion clamps four parts through equalizers. Locating prongs act as chip breakers.

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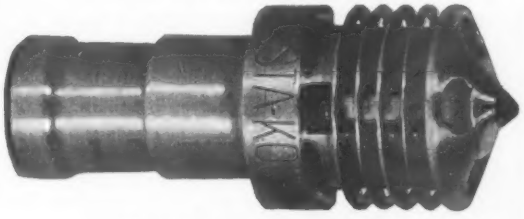
Beverly Hills, Cal.—Criterion Tool Sales
Houston—Engineering Sales Co.
Oneida, N. Y.—W. F. Himmelsbach
Pittsburgh—J. W. Mull, Jr.
Toledo—J. W. Mull, Jr.
Philadelphia, Pa.—Morgan Tool & Equipment Co.

JK SMIT SONS

Precision Diamond Tools



For Accurate Work

The illustration above shows the effective design of the STA-KOOL Diamond Tool Holder.

STA-KOOL—Dissipates Heat
Prolongs Life
Reduces Cost

Write for further information about STA-KOOL—"Tool Engineered" for precision.

J. K. SMIT & SONS, INC.
157 Chambers Street, New York, N. Y.
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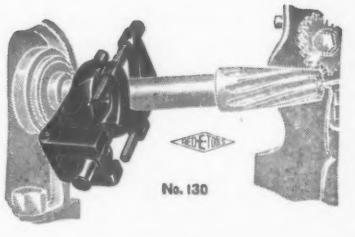
ACCURATE SPACING NO LOST MOTION



When using a RED-E Milling Machine Dog to index work held between centers

A sliding ball and socket universal joint also eliminates binding or cramping with accurate indexing without the use of shims. Perfect work assured.

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THE READY TOOL COMPANY

585 IRANISTAN AVE. **BRIDGEPORT, CONN.**

Rotary Power Tools

TEETH DESIGNED TO PRODUCE SHEARING CUTS AND FLUTES THAT THROW OUT THE CHIPS

"Ground from the Solid After Hardening" for keenness—speed—and for durability which permits regrinding at low cost, Severance Cutter Tools, in various sizes and shapes for the Hard Metal, Wood and Plastic Industries, are known as Midget Milling Cutters—Rod or Tube Deburring Cutters, for inside or outside diameters or in combination—Chatterless Seating and Facing Cutters —Chatterless Countersinks—Reamers and Electrode Dresser Cutters. All made from High Speed Steel. Special Cutters considered upon request.

General information upon request — and engineering service or a confidential treatment of your problem available without obligation.

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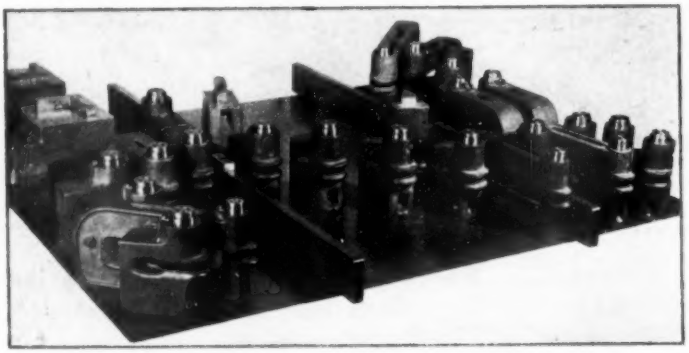
ADJUSTABLE HOLE PUNCHING AND NOTCHING DIES

KEEP THAT PRESS IN OPERATION CONSTANTLY with WALES DIES

when punching holes and cutting notches in flat sheet metal parts. Change from one operation to the next or from one part to another

WITH NO LOST TIME

Slide one set-up out of the press and another in and keep on working.



Nothing attached to the ram of the press.

We make all kinds of dies for punching and notching sheet metal, angle iron and shapes and are

SPECIALISTS IN PUNCHING AND NOTCHING EQUIPMENT

WRITE FOR CATALOG

THE STRIPPIT CORPORATION

1200 Niagara Street **BUFFALO, N. Y.**

A. S. T. E. DOINGS

(Continued from preceding page)

Chairman John Dense who now retires from the Chair to a seat with the Directors for the coming year.

Rockford

The regular meeting on February 6 was held at 6:45 in the Faust Hotel. The entertainment was sponsored, in part, by the Smith Oil and Refining Co., who presented the Fickes Sisters, in a song and dance program. The rest was put on by Billy Loy, electric guitarist, and Ted Mogolis, accordionist.

Co-Chairman Henry Ruehl was in charge and he presented several new members who were in the crowd. He then introduced Mr. T. B. Carpenter, the speaker of the evening.

As election of officers was scheduled there was no dinner speaker. Chairman Ruehl presented the Chairman of the nominating committee, Geo. Sorenson, Jr. who in turn presented the names of the officers nominated by their group. Their selections were, Chairman, Henry F. Ruehl; 1st Co-Chairman, F. J. Kampmeior; 2nd Co-Chairman, Leo W. Reuland; 3rd Co-Chairman, Rudolph A. Haegg; Secretary, Burdette E. Davis; Treasurer, L. Blakemen Ades. As there were no other nominations from the floor. the motion was made and seconded that a unanimous vote be cast for the new officers. A vote was taken and members present said Aye. The meeting was then adjourned for a short intermission at 8:00 P. M.

At 8:50 the meeting was again called to order by Co-Chairman Ruehl, who presented Mr. T. B. Carpenter, from Natco. who spoke on his "Personal Impressions of the European Situation". First he gave an early history of the A.S.T.E., telling how it was born of the depression, as an outlet for information vital to Tool Engineers who wanted to get ahead. He said the founders of the organization had no idea their child would be the big fellow he is today, and still growing.

Mr. Carpenter then told about how he happened to go to Europe, what he saw in Paris, how the plants were being decentralized, and of how on one of his trips he made an unsuccessful attempt to see the Maginot Line. He then went on a short trip to Sweden, and then war broke out so the journey back to France was one of many difficulties. "Blackouts" were described and the sentiments of the French people toward the British were discussed.

He gave three reasons for the collapse of France: 1. Softness from soft living. 2. Too much Government Red Tape, 3. Lack of mechanical preparedness.

Mr. Carpenter's parting words should

(Continued on following page)

SAFETY
Heavy Bevel
LETTERS & FIGURES

ASSISTANCE OFFERED

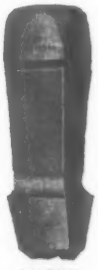
TOOL AND PRODUCTION ENGINEERS

CONFRONTED WITH UNUSUAL MARKING PROBLEMS

SAFETY
Interchangeable
STEEL TYPE

The demands of National Defense creates many unusual production problems. One of the smallest and yet most important is the markings. Many times rejections result because the markings are not clear or up to specifications.

We have several tools that are especially adapted to the marking of shells, airplane parts, castings, and other defense products. These tools are designed to give clearer and more satisfactory markings in every way, and also to be the most economical and safest to use.



SAFETY
Wedge Grip
LETTERS & FIGURES

We urge you to write us explaining your problems and if our regular tools will not be adaptable, our experienced engineers will endeavor to design a method which will best suit your purpose.

MARK WITH SAFETY

M. E. CUNNINGHAM CO.

169 E. CARSON ST. PITTSBURGH, PA.

SAFETY
Wedge Grip
HAND HOLDER

NOTHING BETTER

● Chicago Rawhide hammers and mallets, made from genuine Java Water Buffalo hide, are a first choice wherever pounding must be done on surfaces that must not be damaged.

Accurate—Economical

Hammers have malleable iron heads—an indestructible feature—and replaceable faces.

Mallet heads are tightly coiled and riveted—made to strike hard blows without "mushrooming", splitting or chipping.

● Chicago Rawhide Tools are available thru your supply dealer. Ask him to demonstrate the quality of these tools.

CHICAGO Rawhide MFG. CO.
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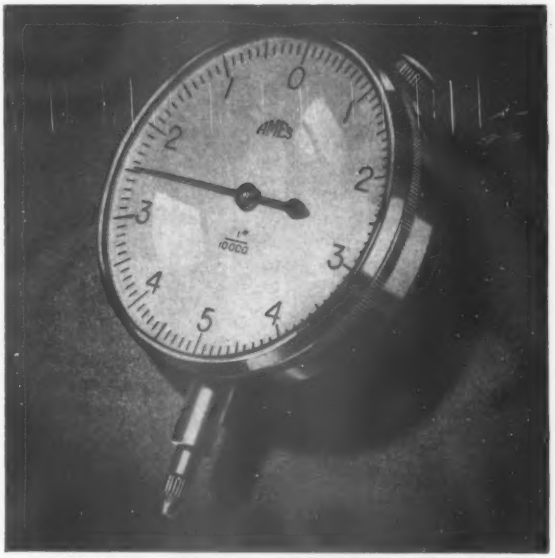
Canadian Office—1332 William St., Montreal.



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Highly sensitive instruments for indicating size variations in tenths of thousandths. Rugged, modern in design and of highest quality. Various sizes and designs shown in catalog. ***Booth No. 367.*** **Send for copy now.**

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MAKES PIPE *and* BOLT THREADERS • HAND SCREW MACHINES

A TOOL OR MACHINE *for* PRACTICALLY *Every* REQUIREMENT

WRITE FOR NEW 1941 CATALOG OR TELL US YOUR PROBLEMS
AND WE'LL GLADLY DISCUSS THEM WITH YOU

THE OSTER MANUFACTURING CO., 2063 E. 61st ST., *Cleveland, Ohio*

A. S. T. E. DOINGS

(Continued from preceding page)

be expounded all over this country, "National Defense is Cheap Insurance."

Chairman Ruehl announced that National President, A. H. d'Arcambal would be the speaker of the evening on March 6.

Schenectady

Schenectady Chapter met Feb. 10, at Troy, N. Y. Dinner was served at 6:45 p.m. at the Troy Y.M.C.A. Following the dinner the group adjourned to the plant of the W. & L. E. Gurley Co. where they were the guest of the members from this company. A very enjoyable program of entertainment was presented before the business meeting.

At the business meeting, Al Schuneman, was elected Chairman for the coming year. Assisting him will be Harry Crump as 1st Vice Chairman, C. E. Smart, 2nd Vice Chairman, and A. M. Reynolds, 3rd Vice Chairman. N. Y. Coxe will continue as Secretary and R. H. Wilke was re-elected Treasurer.

Following the business meeting a very interesting lecture on the subject of "Manufacturing of Abrasive Papers" was given by Mr. H. G. Seaman, of the Behr-Manning Company. Technicolor pictures supplemented Mr. Seaman's talk.

Springfield

Perhaps the best news to report this month comes from our membership chairman, Arthur MacBriar, to the effect that we have attained our goal of 200 members during our first year of operation. I do not believe any other A.S.T.E. Chapter has ever accomplished such a record. "Mac" and his gang deserve a lot of credit for their splendid achievement. The gang, in case you don't know them includes: Messrs. Brown, Stevens, Stonerod, Foster, Abbe, Cassidy, Frasser, Suk, Stone, and Brennan. To the new members—WELCOME. We hope you attend our meetings regularly, and take an active part in our Chapter functions.

Our motto is, "Always a Good Show", and February is "bargain month" with two gala events, both of importance to all Tool Engineers. On Monday, February 17, we had a joint meeting with the American Society for Metals, at the Westinghouse Auditorium E. Springfield Works. Mr. Hans Ernst, of the Cincinnati Milling Machine Company, talked on "The Physics of Metal Cutting." This lecture was full of exceptional basic information for all kinds of metal-cutting operations and included moving pictures and slides.

On Monday, February 24, our regular meeting was held in the Crystal Ballroom of the Bridgway Hotel. Our guest speaker

(Continued on following page)

"Gigantic" DESCRIBES THIS MODERN COLLET

Illustrated is the type of collet manufactured by the Modern Collet and Machine Company to hold oil pipe as it is being heat-treated. The collet diameter is sixteen inches.

If it's a collet, Modern Collet can produce it! Probably no other collet being manufactured today is as large as that shown in the above photograph. From sizes such as this down to those which are extremely small, there is no type of collet which this company cannot furnish in any desired quantity. In standard types for screw machines, lathes or milling machines, thousands are carried in stock.

Exclusive features of design and construction are found in every Modern Collet. They're features that assure you of the best in collet performance. Write for full details.

MODERN COLLET and MACHINE CO.
407 Salliotte St. • Ecorse, Mich.

At the show in March, we will occupy booth 173—and our shop will be open, as always, for your inspection. The men at our booth will furnish transportation.

NATIONAL TOOL SALVAGE CO.
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Destroyer of Friction and Wear

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ROTARY DRILL and PILOT BUSHING

The bore is as perfect as the perfection of the incorporated precision ball bearing. It is

ROUND - CHATTERLESS - SMOOTH

Is built for

Core Drilling
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Boring bar work
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Dust proof as a watch

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BUILDERS OF CARBIDE & DIAMOND BORING MACHINES AND EQUIPMENT

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Superficial
HARDNESS TESTER

FOR THIN OR SURFACE HARDENED METAL

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MECHANICAL INSTRUMENT CO., INC.
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ONE WORK SET-UP
THAT'S ALL
WITH
FRAY
"ALL ANGLE"
MILLING
MACHINE
NO. 7

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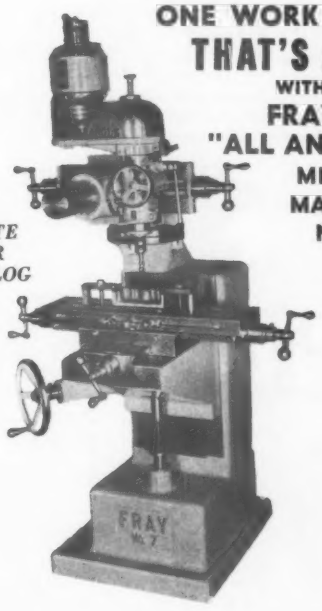

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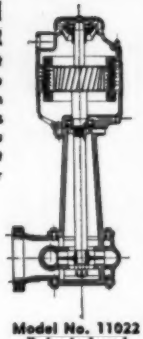
RUTHMAN
GUSHER
COOLANT PUMPS

CUP DISC FAN PROTECTS MOTOR

A patented cup disc fan built into the upper part of the motor prevents oil or dirt from getting on the motor windings—just another reason why you can expect long and efficient service from Ruthman Gusher Coolant Pumps.



Model No. 11022 Patented and Patents Pending

Model No. 11020A

Gushers can be throttled to any speed without building up pressure, and they can handle cutting fluids containing grit without danger of injury. Write for complete data sheets.

THE RUTHMAN MACHINERY CO.
542 E. FRONT ST., CINCINNATI, OHIO
LARGEST EXCLUSIVE BUILDERS OF COOLANT PUMPS

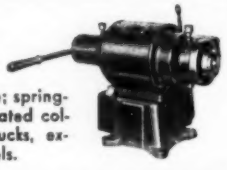
IDEAL SPEED LATHES

For speedier, more economical finishing of small metal and plastic parts . . .

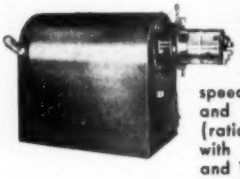
Finishing • *Polishing*
Lapping • *Burring*

See our exhibit—Booth 380—A.S.T.E. Show—Detroit—March 24-29

Equipped with single or 2-speed motor; exclusive, automatic brake; spring-type hand-operated collet, or step chucks, expanded mandrels.



SCHAUER Speed Lathes



Variable-speed lathe, with infinite selection of spindle speeds, between 65 and 5,000 R.P.M. (ratio of 6 to 1 with single speed and 13 to 1 with 2-speed motor.)

• We design special lathes to meet individual production requirements.
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SCHAUER MACHINE CO.
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A. S. T. E. DOINGS

(Continued from preceding page)

was Dr. E. J. Abbott, President of Physicists Research Corporation, Ann Arbor, Michigan, whose subject was "Measuring Surface Finish." Dr. Abbott is the developer of the Profilometer, an instrument that graphically shows the smoothness of a finished surface. We will soon have a standard means of designating surface, for the American Standards Association, in cooperation with members of various technical organizations is working out the problem right now, so that before long you will have to specify the type of finish you want on your drawings. A.S.T.E.'r Dave Wallace, President of Chrysler Corporation, Detroit, is the representative from our Society. One might add an old slogan, "Get educated and keep educated." The fundamental principle of the profilometer is based upon the use of a tracer support which is moved over a surface to be measured. The movement is translated electrically to a direct reading gage. The readings are made in millionths of an inch, commonly called microinches, and represent the running average of the height of the surface irregularities.

This was our first birthday! Yes Sir, we obtained our Charter on February 26, 1940.

Are you taking in the BIG EVENT? Of course you are. The dates—March 25 to 29. The Place: Detroit. Make your plans as soon as possible. Reservation data will be available at our next meeting. The SHOW will be spectacular in every sense of the word. Almost endless will be the exhibit of small tools and machines to increase productive activity, and at the same time, assure utmost precision with closest tolerances. See you in Detroit. A.S.T.E. pays part of your transportation.

St. Louis

St. Louis Chapter held its regular monthly meeting Thursday, February 13, at the Melbourne Hotel. The members were happy to see Chairman Burnside back on the job, after missing two meetings due to illness. The business session wound up with the election of officers for the coming year. Mr. C. M. Andrews reporting for the nominating committee, recommended that the present officers be re-elected for the coming year. The membership was in complete accord, for Messrs. Burnside, Simming, Miller, and Reheis will continue to be Chairman, Vice-Chairman, Secretary, and Treasurer respectively. The technical session was turned over to Mr. F. T. Ellis, of the Heald Machine Company, who had for his subject, "Boring and Precision Finishing of Surfaces." He had a perfect knowledge of his subject, and his hearers experienced little difficulty in following him during this interesting and educational lecture.

Syracuse

At the February eleventh meeting of the Syracuse Chapter Ray Adams was elected Chairman, Clayton Ainsley, Vice-Chairman; Ray Coseo, Secretary; and Ray Wands, Treasurer.

Regional directors elected were Ray Adams, Willard E. Parish, and Thomas J. McMichan. Russell Bull, Chairman of the educational committee outlined the proposed educational program wherein industry and the A.S.T.E. would sponsor a four-year trade course for boys unable to go to college. Wally Ross, Program Committee Chairman, reported that due to the present Defense Program, he had been having difficulty in securing suitable speakers for our meetings. In view of this fact, Wally asked for suggestions as to the type of meetings the members desired. As a result many suggestions for discussions were offered. Of these, the one selected for immediate consideration was "Standardization."

On Valentines Day, February fourteenth the Annual Dinner Dance was held at Drumlines Country Club. 265 members and guests enjoyed an excellent dinner, floor show and music. Prizes were awarded for the best and most humorous Valentines. Door prizes were given. We are greatly indebted to Joe Owens and his committee for the excellent culmination of our entertainment year.

Toledo

Secretary Mogle in the absence of acting Chairman Mr. Kelley called the meeting to order. He introduced the out-of-town members who were present: Messrs. R. L. Burton, Jackson, Michigan, H. W. Golden, Cleveland, Ohio, R. V. Pilloid, Swanton, Ohio, E. O. Anderson, Bowling Green, Ohio.

Speakers' Chairman, Mr. A. Bok, announced that the February meeting was going to be carried out along the same lines. Each member will be allowed to ask three questions. After the first question is asked, anyone can volunteer to answer the three questions. If he answers correctly he will receive twenty-five cents. If he answers incorrectly, the person asking the question receives the twenty-five cents.

Mr. Bok introduced the following as the Board of Experts, for the Round Table discussion, Mr. Hayes, Mr. Haynes, Mr. Burgess, Mr. Burke, Mr. Lamabe.

The meeting was then turned over to Mr. McNett. There were some very interesting questions asked, and there was much discussion.

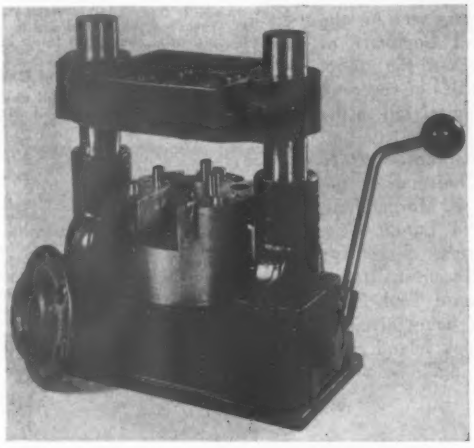
Tri-Cities

The Tri-Cities Chapter held its regular

(Continued on following page)

For Your Drilling Operations;

ESCO "STANDARD" DRILL JIGS



Illustrated above, the photograph shows a standard E-22 Drill Jig complete with adapters, to multiple drill the part shown at the left of the photograph.

BOOTH 225

If you have any difficult drilling operations or are urgently in need of tooling for various items, large or small—don't fail to spend a few minutes in our Booth No. 225 at the A.S.T.E. Show.

You will find a variety of sizes and models of ESCO Standard Drill Jigs to suit all your requirements.

Send us your part prints for recommendations. Order standard fixtures from stock.

ESCO ENGINEERING CORPORATION

4855 Fourth Avenue **Detroit, Mich.**

FOUR SIZES

of hand and power-operated C-F Positioners provide capacities from 1200 to 14000 lbs.

Tables tilt 135°, rotate 360°. Table height is adjustable. Table top is removable.

Rotating and tilting movements are independent. Rotating drive may be constant or variable.

The exclusive design of C-F Positioners permits a wide range of installation arrangements.

C-F Positioners provide better, safer, production welding.

Everyone concerned with welding knows that positioned welds, made down-hand are the best. Innumerable time studies also show these additional advantages of positioned welding: savings in welding time, cleaning time, overhead crane service and increased safety.

Write today for Bulletin WP-20 giving full information.

This circular, just off the press is an informative folder showing many examples of better and more economical welding with C-F Positioners.

CULLEN-FRIESTEDT CO.

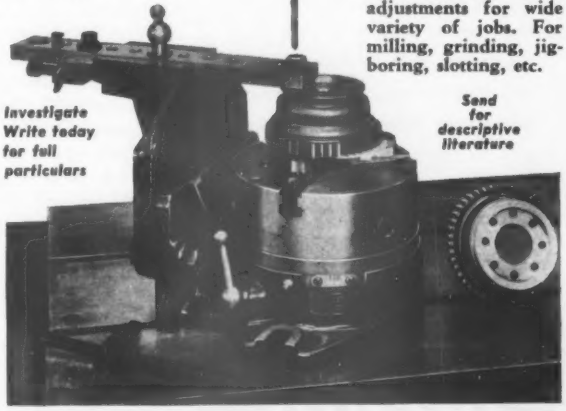
ELIMINATE ERRORS SPEED PRODUCTION LOWER COSTS with a HARTFORD SUPER SPACER

Superior spacing device—tried and proved—for the rigid control of accurate machining operations

Cut shows Super Spacer equipped with Drilling Attachment which can be quickly secured to Super Spacer Base. Ample adjustments for wide variety of jobs. For milling, grinding, jig-boring, slotting, etc.

Investigate Write today for full particulars

Send for descriptive literature



THE HARTFORD SPECIAL MACHINERY CO.
HARTFORD, CONN.

LUFKIN
UNIVERSAL INDICATOR

2
READING FACES

And those two reading faces offer just one big reason why the Lufkin Universal Indicator is the outstanding Indicator of the day. No matter how the tool is set, you can take readings without resorting to the use of mirrors or awkward positions. Then, too, the one-piece rotating head both lengthens the tool's life and permits easier, more rapid setting. Your dealer will be glad to give you a demonstration. Write for Catalog.

LUFKIN
SAGINAW, MICHIGAN · New York City
TAPES · RULES · PRECISION TOOLS

A. S. T. E. DOINGS

(Continued from preceding page)

monthly meeting on February 5 at the LeClaire Hotel, in Moline, Illinois.

Mr. T. B. Carpenter, Engineer for the National Automatic Tool Company of Richmond, Indiana, addressed the group, and described the difficulties of escaping from France after the Capital fell to the German invaders.

Mr. W. Z. Fidler, Chapter Secretary last year, was named Chairman at the meeting. He succeeds J. B. Morgenthall. Other officers are Sigurd Lunde, Vice Chairman; Loyal Rodgers, Secretary; and F. J. Siebenmann, Treasurer. It was announced that the defense Tool Engineers' training, which is being given to ninety men at the old Rock Island High School, is now "really going."

Twin Cities

Mr. George Wise, Chairman, opened the meeting and asked Mr. Pennington to give a report on the Semi-Annual Meeting held last October. The Secretary was asked to read the Monthly News Letter for February. Due to the small attendance at this meeting, the Election of Chapter Officers was postponed to the regular March meeting.

After the business meeting we were joined by many more for the lecture in the Auditorium.

Mr. W. H. Oldacre, Research Engr. of the D. A. Stuart Oil Company presented a lecture on Modern Cutting Lubricants and Modern Applications, illustrated by slides. A question period followed. There was a display of lubricants, and samples of work done with the aid of these lubricants.

Western Michigan

On February 10 the Western Michigan Chapter held a supper meeting in the Browning Hotel in Grand Rapids.

The following officers were elected for the coming year: Mr. J. Monahan, Chairman, Mr. J. Randall, Vice Chairman, Mr. K. Butterfield, Secretary, Mr. E. Roosien, Treasurer.

There was a general discussion of the A.S.T.E. 1941 Machine & Tool Progress Exhibition and a great amount of interest was displayed in this event which is sure to draw a large delegation from Western Michigan.

Mr. J. Randall acted as toastmaster and introduced Mr. James R. Longwell of the Carboloy Company, who spoke on "Application of Cemented Carbide Cutting Tools". At the conclusion of Mr. Longwell's talk the meeting was opened for general discussion. It soon developed that carbide tools had been used with varying degrees of success.

(Continued on following page)

CHICAGO MOUNTED WHEELS OF V/T SUPER BOND

150% LONGER LIFE

Rigid tests on snagging and exacting operations prove they have 150% to 300% longer life. Won't ridge on welds, sharp corners, sinking dies, barbering, etc. There's a shape and size to handle every grinding job faster, better, at lower cost.

Free Mounted Wheel Chart

For ready shop reference. A wall chart 22" x 15" showing actual size and shape of every standard Chicago Mounted Wheel.

TRIAL WHEEL

Let us send you a trial wheel. Tell us the kind of job, type of equipment you now use and size wheel and we'll send you a free sample wheel.

Handee Tool of 1001 Uses

Grinds, drills, polishes, cuts, routs, carves, sands, saws, sharpens, engraves, cleans, etc. Uses 300 accessories. 25,000 r.p.m. Wt. 12 oz. $18.50 with 7 accessories.

Send for catalog of complete line.

CHICAGO WHEEL & MFG. CO.
Makers of Quality Products for 40 Years
1101 W. Monroe St., Dept. TE, Chicago, Ill.

10 days Free Trial

GARRISON
GEAR CHUCKS
are used on—

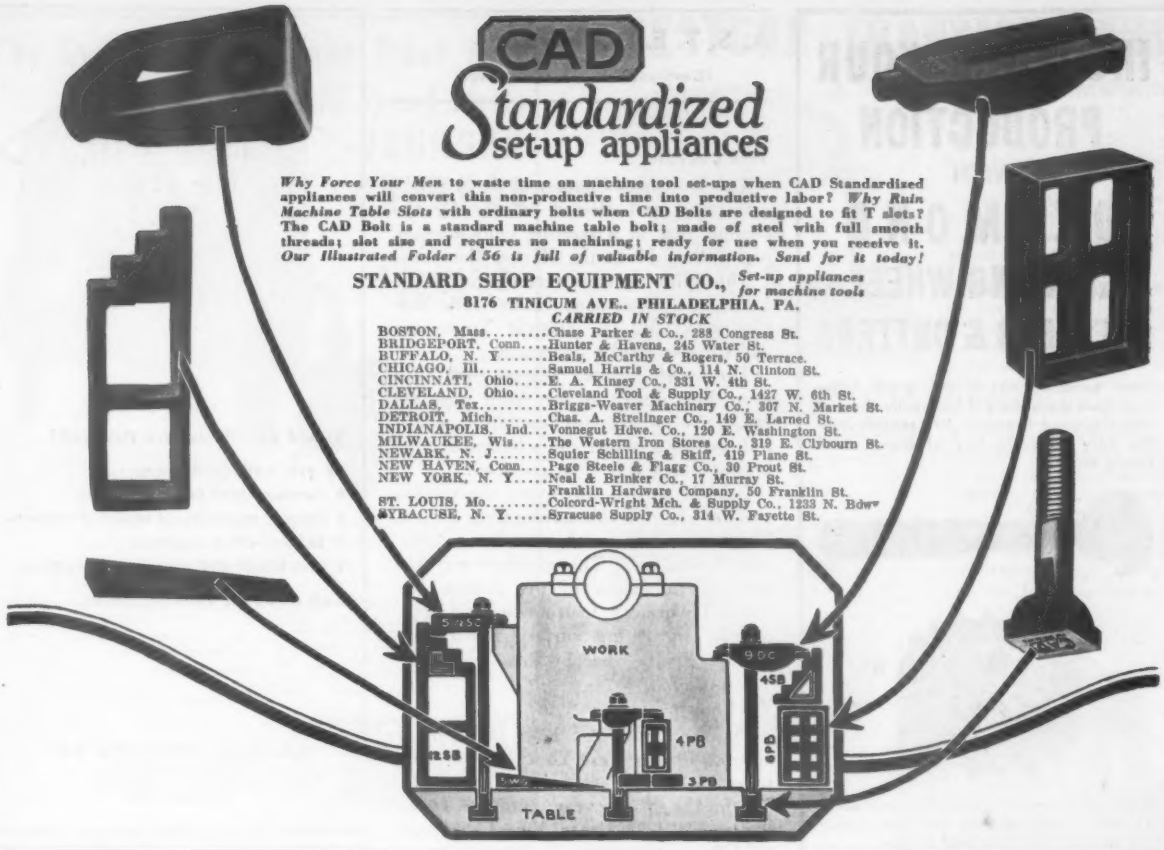
- GEAR SHAPERS
- DRILL PRESSES
- ENGINE LATHES
- TURRET LATHES
- INTERNAL GRINDERS
- EXTERNAL GRINDERS
- OSCILLATING GRINDERS
- DIAMOND BORING MACHINES
- HORIZONTAL BORING MILLS

and are used for—

Grinding . . . Precision Boring . . . Machining and other operations on Spur . . . Internal . . . Bevel . . . Cluster . . . Helical and Herringbone Gears.

GARRISON
MACHINE WORKS, INC.
DAYTON OHIO

CAD Standardized set-up appliances



Why Force Your Men **to waste time on machine tool set-ups when CAD Standardized appliances will convert this non-productive time into productive labor?** ***Why Ruin Machine Table Slots*** **with ordinary bolts when CAD Bolts are designed to fit T slots? The CAD Bolt is a standard machine table bolt; made of steel with full smooth threads; slot size and requires no machining; ready for use when you receive it.** ***Our Illustrated Folder A 56 is full of valuable information. Send for it today!***

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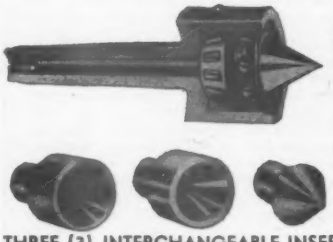

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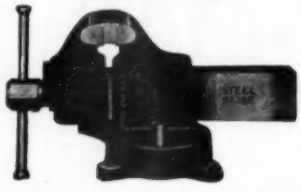
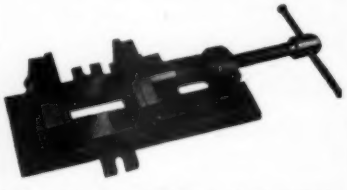


The exclusive solid steel slide makes these vises stronger and more serviceable than iron slide vises at no extra cost to you.



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A. S. T. E. DOINGS

(Continued from preceding page)

Worcester

The Worcester Chapter of the A.S.T.E. nominated and elected officers for the coming year at a meeting held Monday night, Feb. 10 at the Norton Company.

The following men were elected: C. J. Lindegren, Chairman; Leslie Goff, Vice Chairman; W. O. Aldrich, Treasurer; and Charles Banks, Secretary.

The newly elected officers will take over their duties at the April meeting. Inspection of the machine division was followed by a dinner and a business meeting, at which Ray Cole presided.

Colored movies portraying the various uses of Norton abrasives were shown. These were followed by a talk on "Surface Finishing". The speaker was Dr. Randall Robertson of the Norton Research Laboratory. Instruments and methods for measuring surface finish were shown and described by Ray Cole.

York

The York Chapter held its monthly meeting at the West York Inn, on February 11. They elected the following officers for the ensuing year; Hallet D. Jones, Chairman; Ivan Grass, Vice Chairman; Herb Boyer, Secretary; and Irving Boyer, Treasurer. "Connie" Hersam, National Secretary, attended the meeting and gave a short talk hitting the high spots of the forthcoming A.S.T.E. Show. An interesting illustrated talk on the subject of lubrication was given by Mr. Townley of the Socony Oil Company.

March Meetings

BINGHAMTON—Mar. 13. 7:00 P. M. Art Gallery, Arlington Hotel, Binghamton. Mr. Kellar of the Scintilla Magneto Company will speak on the "Use of Magnesium in Jig and Fixture Design". Mr. Lenox of the Int. Business Machines Corporation will speak on "Small Production Low-Cost Dies", and Mr. Allen of the Agfa Ansco Corporation will speak on "Drawing Dies."

BOSTON—Mar. 7. Dinner 6:30 P. M. Hotel Bradford. Joint meeting with the American Society of Metals. Mr. Frank Palmer of the Carpenter Steel Company will speak on the subject "Better Tools for Industry."

CLEVELAND—Mar. 14. 6:30 P.M. Hotel Allerton, Chester and E. 13th. A. C. Denison, Fulton Foundry & Machine Co., will speak on Cast Iron and Meehanite. Illustrated. Reservation: Wm. Reiff, Jr.

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Precision Lathes

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The U-1236 WQ (illustrated) comes with 4-speed anti-friction lever-operated, Pedestal Motor Drive. Full Quick Change Gear Box; Large Special Analysis Steel Spindles that are ground *all-over*, inside and out—even the spindle nose thread is ground; Precision Preloaded Ball or Roller Spindle Bearings, Double Walled Worm Feed Apron with Power Cross Feed and other quality features. Sheldon lathe beds are semi-steel with hand scraped ways, 2 V-ways and 2 flat ways.

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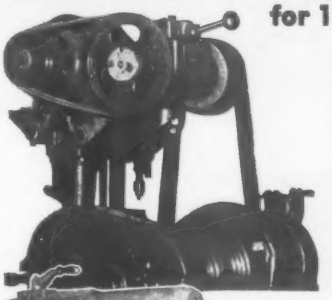

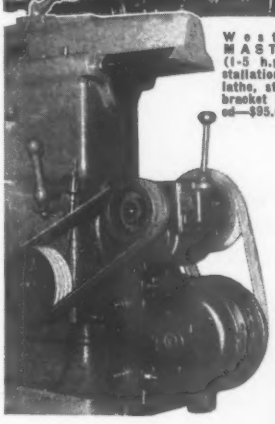

Western MASTER—(1-5 h.p.) installation on a lathe, standard bracket included—$95.00.

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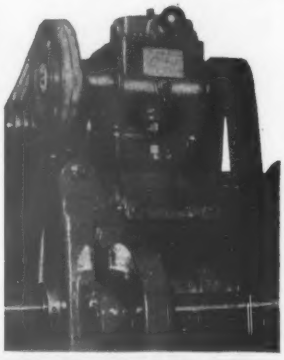

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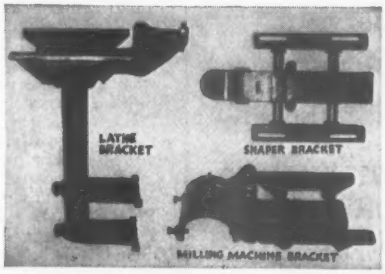

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MARCH MEETINGS

(Continued from preceding page)

CHICAGO—Mar. 3. Dinner 6:00 P.M. Midwest Athletic Club, Hamlin and Madison Streets. Mr. George E. Brumbach of the Carpenter Steel Company will speak on the subject "Better Production Through Better Tooling." Reservation: Mr. Croft, Van Buren 8200.

DAYTON—Mar. 10. Dinner 6:30 P.M. Gibbons Hotel. Mr. F. O. Hoagland of the Pratt & Whitney Company will speak on "Progress in Machine Tool Design."

HARTFORD—Mar. 3. 8:00 P.M. Hartford Gas Auditorium, Pearl Street, Hartford. Mr. George G. Leitch of the Colt's Patent Fire Arms Mfg. Company and Mr. Francis R. O'Leary of the Waterbury Mfg. Company will be the speakers. Reservation: Mr. Arthur A. Merry, Pratt & Whitney Aircraft Division.

INDIANAPOLIS—Mar. 27. 7:00 P.M. Hoosier Athletic Club, Indianapolis. Mr. C. A. Page of the Pratt & Whitney Company will talk on "Gage Design and Gage Making." Reservation: Mr. R. D. Harris, Irvington 8321.

MILWAUKEE—Mar. 13. Dinner 6:30 P.M. Meeting 7:30 P.M. Colonial Room, Republican Hotel. Mr. R. S. Drummond, President of the National Broach and Machine Company will speak on "Modern Gear Practice—An Aid to National Defense." Reservation: Julius Reidl, Seaman Body Corporation.

NEW YORK-NEW JERSEY — Mar. 11. 8:00 P.M. Robert Treat Hotel, Newark, New Jersey. Mr. W. B. Scott will speak on the subject, "Aluminum Bronze Alloy." Sound pictures will also be shown.

PEORIA—Mar. 4. 6:30 P.M. Professor Oakes will speak on "The Wizard of Waukesha." "Modern Plastics", a color and sound motion picture will also be shown. Reservation: Mr. Everett C. Bowton, Phone 2-6984.

PHILADELPHIA — Mar. 20. Dinner 6:30 P.M. Engineers Club. Mr. J. C. Heitman of the Standard Gage Company, Inc. will speak on "Johansson and the World's Progress."

ROCHESTER — Mar. 3. 6:00 P.M. Rochester Chamber of Commerce. The speaker will be Otto Winter of the American Society of Tool Engineers Emergency Training Program. Reservation: Mr. C. G. Newton, Stone 2893.

ROCKFORD—Mar. 6. 6:30 P.M. Hotel Faust, Rockford. The speakers will be Mr. A. H. d'Arcambal, President of the American Society of Tool Engineers, and Captain Irvin L. Lancaster will talk on "Organization, Construction and Cost Function of Camp Grant." Reservation: Allis-Chalmers, Main 6270, Rockford.

ST. LOUIS—Mar. 13. 6:30 P.M. Melbourne Hotel, Lindell & Grand Boulevard. The speaker will be Mr. Hugh H. C. Weed.

SPRINGFIELD—Mar. 24. Dinner 6:30 P.M. Meeting 8:00 P.M. Hotel Bridgway. Mr. A. N. Kugler of Air Reduction Sales Company will speak on "Welded Designs for Jigs & Fixtures." A sound moving picture, "Steel for the Ages", will be shown by Allegheny Ludlum Steel Company. Reservation: Kenneth Miller, 41 Taylor Street, Phone 3-1360.

SYRACUSE — Mar. 11. Dinner 6:30 P.M. Meeting 8:00 P.M. Syracuse Industrial Club. The Speakers subject will be "Air & Hydraulic Circuits."

(Continued on following page)

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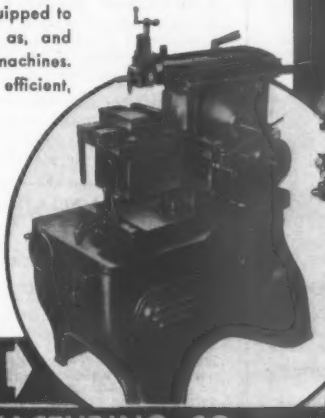

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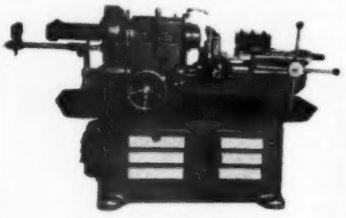

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MARCH MEETINGS

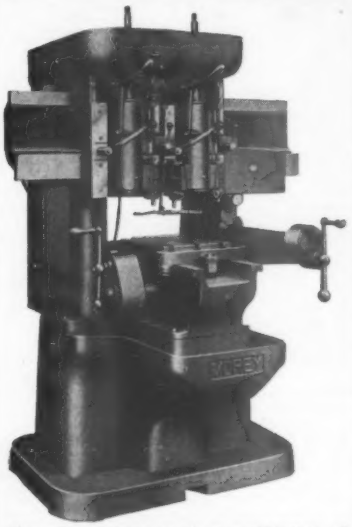
(Continued from preceding page)

TOLEDO—Mar. 10. 6:30 P.M. Toledo Yacht Club. Allen Owen will speak on "The Relationship of Patents to Engineering — Development." Reservation: R. H. Mogle, 3722 Leybourne Avenue, La. 8783.

TRI-CITIES—Mar. 5. 6:30 P.M. LeClaire Hotel, Moline, Illinois. Mr. A. H. d'Arcambal, President of the American Society of Tool Engineers, will speak on "Machinability of Metals."

WORCESTER—Mar. 10. Joint meeting with the American Society for Metals. At Putnam and Thurstons. The speaker will be Dr. Norman Stotz of Universal Cyclops Steel Company.

MOREY No. 12M High Speed Vertical PROFILER and MILLING MACHINE



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Finish grinds smooth keen cutting edges.

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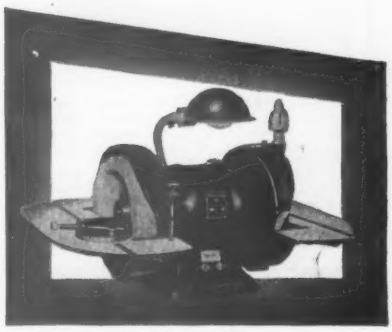

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THE Passing Parade

Walter E. Marble, veteran Sales Representative for the D. A. Stuart Oil Company, Chicago recently passed the half-century mark in his company's service. At a gathering in his honor he was presented with a group letter, and he is reputedly looking forward with keen anticipation to his seventy-fifth anniversary.

A. G. Nancarrow has been elected president of the Universal Engineering Co., Frankenmuth, Michigan. He has represented the Company in the Detroit territory for eight years.

T. I. Phillips, formerly general works manager, has been made assistant to the president of Westinghouse. He will continue in charge of the headquarters manufacturing staff, the Small Motor, Lighting and Transformer Divisions, and the Construction Department of the Company. Mr. Phillips joined Westinghouse in 1915 and soon distinguished himself in tooling the Chicopee Falls Works.

Westinghouse's Phillips
His rise started at Chicopee Falls.

William L. Dolle has been elected to the post of president and general manager of the Lodge & Shipley Machine Tool Co. Fred Albrecht is vice president and treasurer, Louis L. Weber is secretary and Fred Schoeffler is works manager.

H. F. Schotters has been appointed to supervise the distribution of Hobart Arc Welders in northern Indiana and western Michigan, with headquarters at Koontz-Wagner Electric Company in South Bend.

E. A. Doogan, past chairman of the St. Louis Chapter, has been appointed Supervisor of Tool Designing at the Curtiss-Wright plant in Robertson, Mo.

(Continued on following page)

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PASSING PARADE

(Continued from preceding page)

Carl W. Coslow, formerly Mechanical Superintendent of the Hamilton Watch Company, located at Lancaster, Pa., will join the executive staff of the Lockheed Aircraft Corporation, Burbank, Cal.

James W. Mead has been appointed to the post of manager of the Philadelphia Plant of Joseph T. Ryerson & Son, Inc. He has been with the company 22 years and was formerly assistant manager of the Philadelphia organization.

K. P. Rolston, formerly chief engineer with the Screw Machine Specialty Co., of Pittsburgh, has accepted the post of works manager in charge of mechanical production with the Hunter Manufacturing Corporation, Bristol, Pa. The latter company is manufacturing munitions for defense work.

Hunter's Rolston
Will manage munitions production.

M. G. Fitch, daughter of the company's founder, has been elected president of the Gammons-Holman Company, following the recent death of Mrs. Gammons. C. Arthur Hoaglund was elected director and secretary.

David S. Lewis has been appointed assistant to the sales manager of the Jessop Steel Company.

Died

Lewis E. Saunders, 67, a pioneer in the development of electric furnace abrasives and vice president of the Norton Company, on February 20, after an illness of two weeks.

Leo H. Gaudreau, 44, secretary of the Bay State Tool & Machine Company, on February 12, in Springfield, Mass. He organized the tool company 24 years ago in partnership with four brothers. At present the plant is engaged in filling government defense orders.

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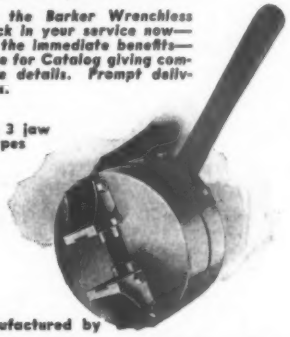

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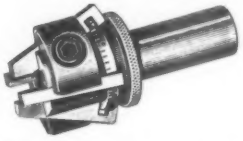

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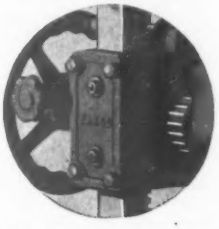

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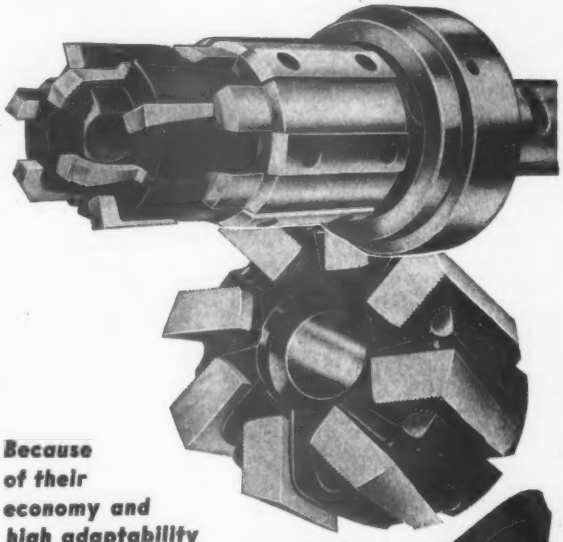

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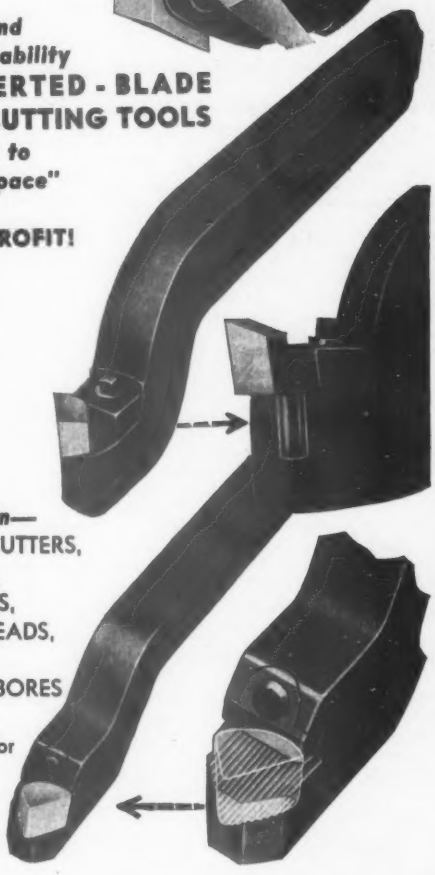

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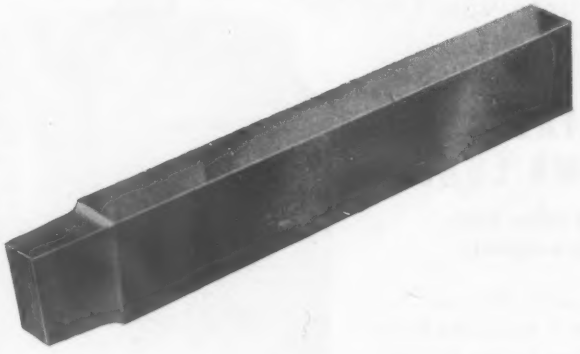

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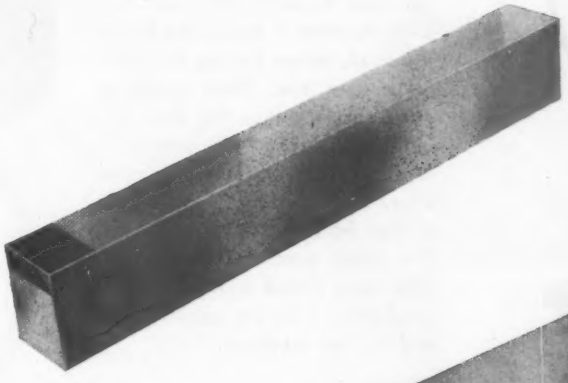
Left Hand-Reverse Image, Right Hand Shown

Tool No. RH	LH	Shank Size
R-100	L-100	1/4 x 1/4 x 2
R-101	L-102	5/16 x 5/16 x 2 1/4
R-103	L-104	3/8 x 3/8 x 2 1/2
R-105	L-106	7/16 x 7/16 x 3
R-107	L-108	1/2 x 1/2 x 3 1/2



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Tool No.	Shank Size
300	1/4 x 1/4 x 2
301	5/16 x 5/16 x 2 1/2
302	3/8 x 3/8 x 2 1/2
303	1/2 x 1/2 x 3 1/2

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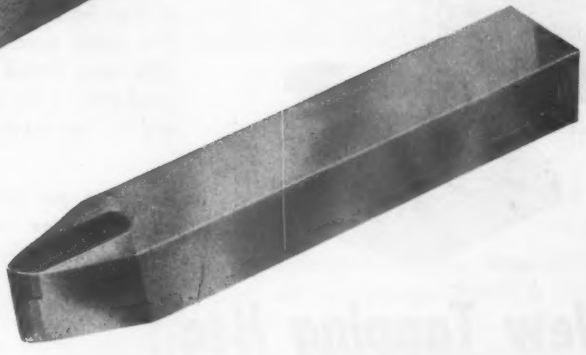
Tool No.	Shank Size
200	1/4 x 1/4 x 2
201	5/16 x 5/16 x 2 1/4
202	3/8 x 3/8 x 2 1/2
203	7/16 x 7/16 x 3
204	1/2 x 1/2 x 3 1/2



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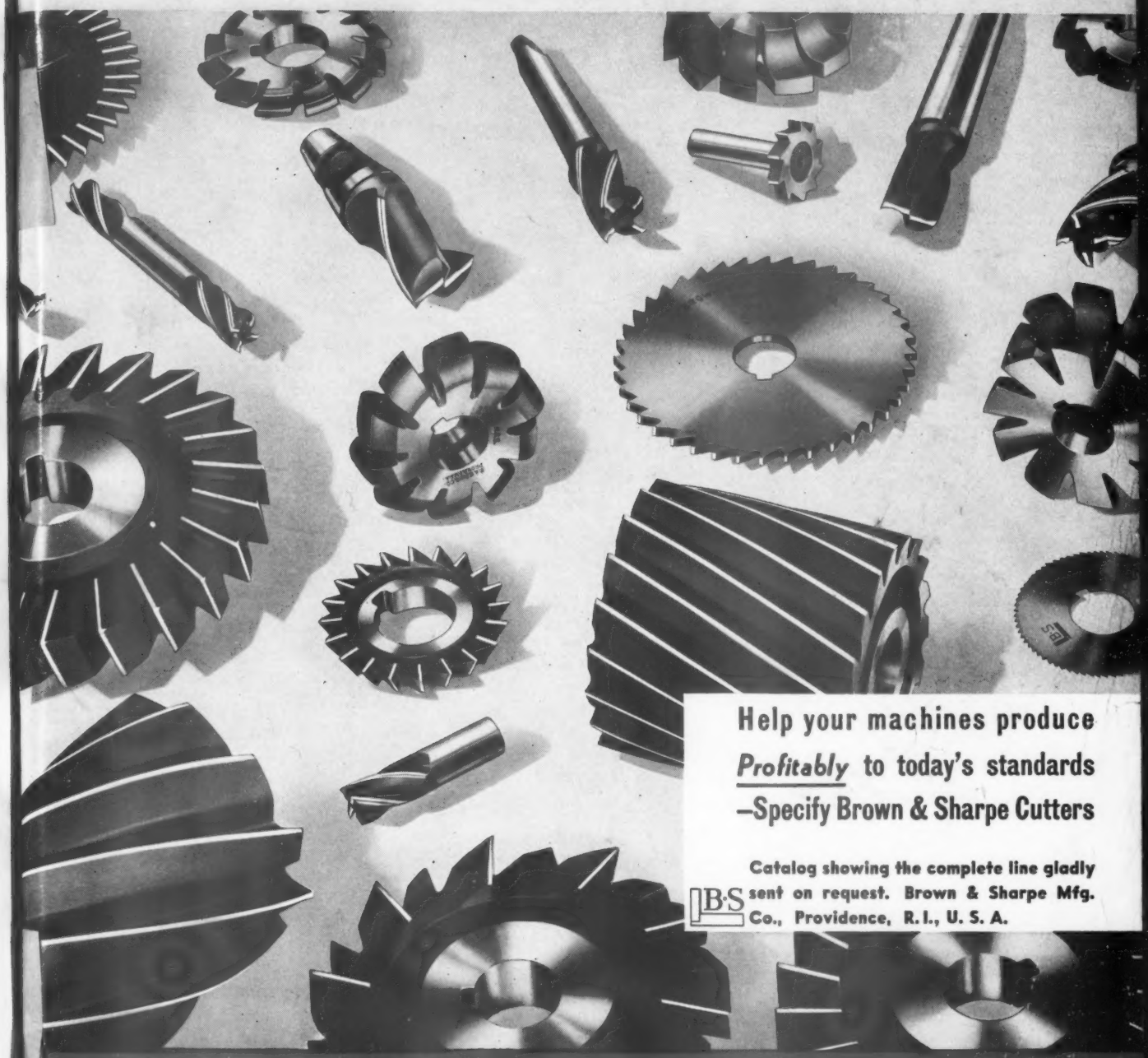

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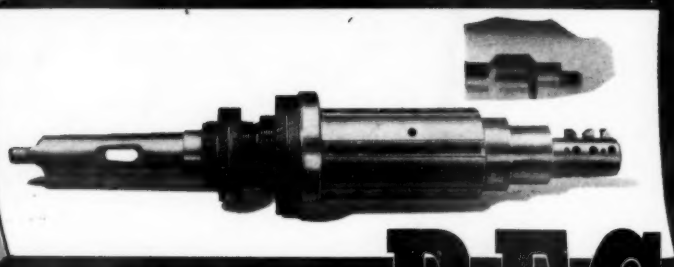
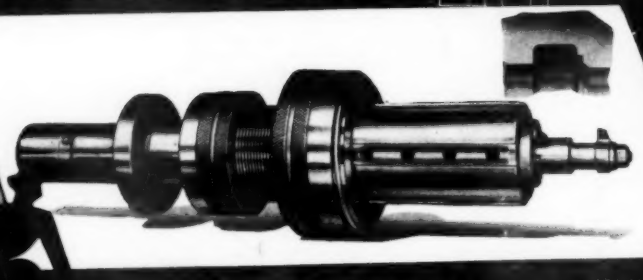
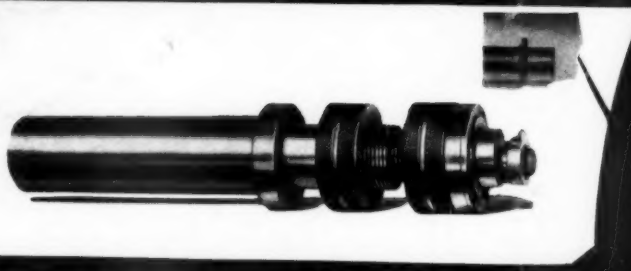


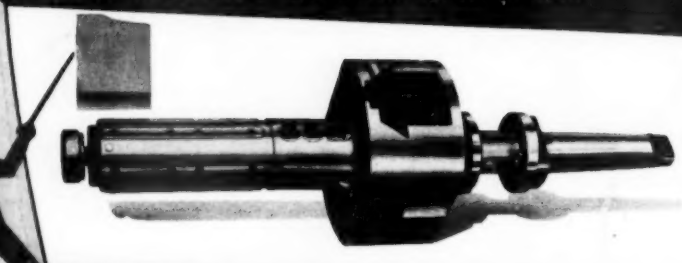
Three chamfering cuts made at same time on airplane motor casting by this automatic tool.



Automatic tool for cutting recess and two chamfers in supercharger part.



For automatic screw machine to obtain finished chamfer or radius where usual burr is left by cut-off tool.



Slide action tool to chamfer, rough and finish bore 3 1/16" hole, while finish facing 6 5/8" pad on reduction gear housing of airplane motor.

Tool for recessing three 5" diame-

with

AUTOMATIC RECESSING TOOLS

You can groove faster, more accurately and economically with Scully-Jones recessing tool. . . These automatic tools are suitable for production work on Turret Lathes, Automatic Screw Machines, Drill Presses or Horizontal Boring Mills for grooving, undercutting, recessing, necking and facing.

Adjustment is provided for the tool bit after grinding as well as location of groove and correct depth setting to control the diameter of recess.

Send us blueprint or sketch of your recessing problem or ask for Folder No. 110.

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